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National Screening Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities, 1986

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Research Triangle Park, NC

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This report describes the results of the 1986 National Screening Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities (Screening Survey). This survey was conducted to collect preliminary data necessary to select a sample for a more detailed follow-up survey, the National Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling (TSDR) Facilities. Respondents were required to complete the questionnaire under Section 3007 of the Resource Conservation and Recovery Act that authorizes collection of information for regulatory development purposes. Survey objectives included information that would: (1) uniquely identify the name, location, ownership, operating status, and commercial availability of every TSDR in the country; (2) characterize the type, scope, nature of the hazardous waste and the hazardous waste TSD and recycling operations onsite at each TSDR in the country; (3) be used in regulatory development; and (4) assist EPA in understanding the relationship between hazardous wastes managed in units exempt from RCRA regulation and hazardous wastes managed in units regulated under RCRA.

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OFFICE OF POLICY, PLANNING, AND INFORMATION
OFFICE OF SOLID WASTE
U.S. ENVIRONMENTAL PROTECTION AGENCY
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John L. Warren was the RTI Project Manager. Hall Ashmore directed the development of the questionnaires; Danny Allen and Kathy Almich developed the computer support systems for the survey and subsequent analyses. Brenda Hair managed the questionnaire receipt operations and Pat Best supervised the data entry operations.

This report was written by Jim Craig, John Warren, Sandra Curtis-Powell, and Renae Clawson. Initial editorial review was done by Maria Bachteal. Christine Ellestad conducted the final detailed editing, layout, and map design.

Finally, we wish to thank the over 5,500 facilities that responded to the survey. Their responsiveness enabled us to achieve a 100 percent response rate and ensure the usefulness of the results.

John L. Warren, RTI Project Manager
Jim Craig, EPA Project Manager

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Executive Summary

EXECUTIVE SUMMARY

This report describes the results of the 1986 National Screening Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities (Screening Survey). The Office of Solid Waste (OSW) in the U.S. Environmental Protection Agency (EPA) conducted this Screening Survey to collect preliminary data necessary to select a sample for a more detailed follow-up survey, the National Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling (TSDR) Facilities. Respondents were required to complete the questionnaire under Section 3007 of the Resource Conservation and Recovery Act (RCRA) that authorizes collection of information for regulatory development purposes. The EPA retained the Research Triangle Institute (RTI) to conduct both surveys.

SURVEY OBJECTIVES

- To gather current information that would uniquely identify the name, location, ownership, operating status, and commercial availability of every TSDR in the country.
- To gather information to characterize the type, scope, and nature of the hazardous waste and the hazardous waste treatment, storage, disposal, and recycling operations onsite at each TSDR in the country.
- To gather information to use in regulatory development. Most regulations require background information documents, investigation of enforcement and sampling methods, and cost estimations before promulgation.
- To begin to understand the relationship between hazardous wastes managed in units exempt from RCRA regulation and hazardous wastes managed in units regulated under RCRA.

WHO WAS SURVEYED?

The project team assembled the best information available on the current population of both commercial and noncommercial TSDRs in the United States and developed a single, comprehensive list of facilities. This initial list contained 5,505 hazardous waste TSDRs, including both commercial and noncommercial facilities. After further research, we discovered an additional 101 facilities to bring the final total to 5,666 facilities.

SURVEY ADMINISTRATION

The initial mailing of 5,505 screening questionnaires was conducted during the week of February 20-26, 1986. A data receipt control system containing unique computer software, data files, and procedures specifically designed for the Screening Survey was used to track all aspects of the survey and to retain a file history for each facility. The project team also established a toll-free survey helpline service for the Screening Survey to help respondent facilities complete their questionnaires.

FACILITIES INCLUDED IN THE RESULTS

Table ES-1 presents the final data-collection results of the survey. The 5,666 facilities in the Screening Survey data base include the original 5,505 facilities and the 161 additional facilities that were located subsequent to the initial mailing.

TABLE ES-1. SCREENING SURVEY DATA COLLECTION RESULTS

STATUS	COUNT	PERCENT
Completed questionnaire, active	2,971	52.5
Completed questionnaire, inactive	2,452	43.3
No longer in business	183	3.2
Included in error (duplicates, etc.)	60	1.0
Refusal	0	0.0
Total	5,666	100.0

These results include only those facilities that were *active* in 1985 or were actively managing hazardous waste when they answered the questionnaire in the first half of 1986. These results do not include facilities that:

- have closed their TSDR capabilities and managed no hazardous waste in 1985,
- were never a TSDR facility,
- only have management units that are exempt from RCRA permitting requirements,
- manage wastes regulated as hazardous under state law and manage no federally regulated hazardous waste,

- only have 90-day accumulation, or
- were no longer in business.

NATIONAL HAZARDOUS WASTE QUANTITIES

Table ES-2 shows the quantity of hazardous waste managed by all active facilities in the United States during 1985.

Of the total 272 MMT, 267 MMT is classified as hazardous under federal RCRA regulations and 5 MMT is classified as hazardous under state but not federal regulations. The most common example of waste that is hazardous under state regulation and not under federal regulation is waste or used oil.

TABLE ES-2. QUANTITY OF HAZARDOUS WASTE MANAGED BY ACTIVE FACILITIES DURING 1985 (MILLION METRIC TONS)

	UNITS REGULATED UNDER RCRA	UNITS EXEMPT FROM RCRA PERMITTING REQUIREMENTS*
HAZARDOUS UNDER FEDERAL REGULATIONS	267	184
HAZARDOUS UNDER STATE REGULATIONS	5	127
TOTAL	272	311

* Primarily wastewater treatment in tanks prior to discharge 1) to a publicly owned treatment works (POTW) or 2) under a National Pollutant Discharge Elimination System (NPDES) permit.

These hazardous waste quantities include only quantities that were managed in 1985. Some facilities were in the process of discontinuing hazardous waste management operations or undergoing closure of all or part of their TSDR capabilities. Others were going out of business at the site. Of the 2,971 facilities active in 1985, 324 or approximately 11 percent were in this category. These closing facilities accounted for 5.3 percent of hazardous waste quantity managed in units exempt from RCRA permitting requirements and 2.4 percent of the hazardous waste quantity managed in units regulated under RCRA. There were an additional 90 facilities that are not included as active because they are also closing but managed no hazardous waste quantities during 1985.

Of the 272 MMT managed in units regulated under RCRA, 232 MMT (85.3 percent) was treated, 100 MMT (36.8 percent) was stored, and 33 MMT (12.1 percent) was disposed. Because some hazardous wastes went through more than one management technology (treated, then stored, and then disposed), these percentages do not sum to 100 percent. Based on follow-up telephone calls to the top 20 facilities, we estimate that a minimum of 80 percent of the 272 MMT managed in units regulated under RCRA is hazardous wastewater.

Several factors influence the accuracy of the numbers indicating the quantity of hazardous wastes managed in exempt units:

- In many states, quantities of hazardous wastes managed in exempt units do not have to be manifested or reported. Consequently, facilities do not expend as much effort accurately measuring these quantities as they do with hazardous wastes managed in units regulated under RCRA.

- Survey respondents noted that these quantities were usually estimates with a much lower level of precision than the data for hazardous wastes managed in units regulated under RCRA.

- If a hazardous waste were treated in both regulated and exempt units, the survey instructions directed respondents to report it only for regulated units. If a respondent failed to do this, the same waste quantity was counted as being managed in both regulated and exempt units. Thus, adding quantity managed in regulated units to quantity managed in exempt units would overestimate the total quantity of hazardous waste managed at the facility.

EPA's last major survey of hazardous waste TSDRs was conducted in 1982 to collect data for 1981. Using that survey, EPA estimated 264 million metric tons (MMT) of hazardous waste were managed in regulated units at TSDR facilities in 1981. Estimates from the Screening Survey for 1985 are 272 MMT. However, it is not possible to make direct comparisons between the 1981 survey and the 1985 survey because there have been major changes in the universe of wastes considered hazardous under RCRA since 1981. Some of these changes include:

- The universe of solid hazardous wastes that are considered hazardous has changed. Additional hazardous wastes have been listed and others have been delisted .

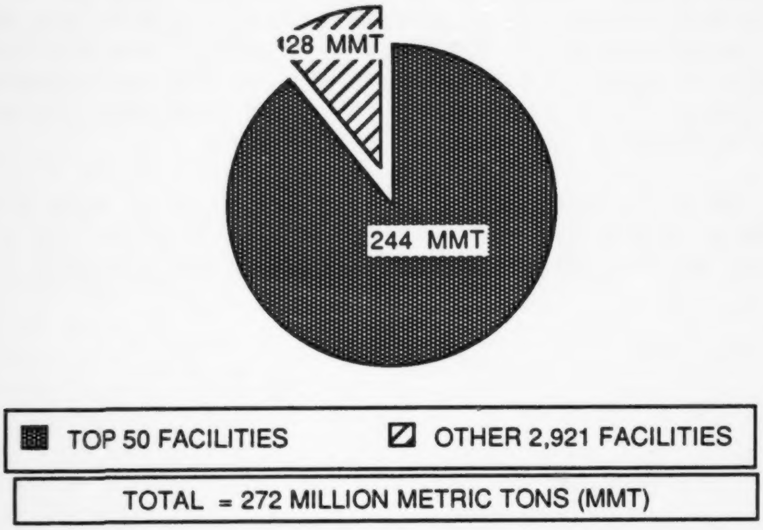
- The type of facilities regulated under RCRA has changed. Tighter restrictions on land disposal facilities caused a significant number of facilities to modify or cease their hazardous waste operations in anticipation of the regulations.

- Some small quantity generators that were not regulated in 1981 are now being regulated.

- The nation's economic output affects the generation of hazardous waste. The level of this output is different from year to year; for example, 1985 had a higher output than 1981.
- The Hazardous and Solid Waste Amendments (HSWA) of 1984 appear to be having a significant impact on hazardous waste management and have affected the 1985 results.
- The quantities of hazardous wastewater have such a significant effect on national estimates of hazardous waste managed that a change or misreporting at only a few facilities can cause a large shift in estimated quantities.

Figure ES-1 shows the distribution of hazardous waste managed by the 50 largest TSDRs in the United States. These facilities managed 244 MMT of hazardous waste (90 percent of the total hazardous waste managed in units regulated under RCRA at TSDRs).

FIGURE ES-1 QUANTITY OF HAZARDOUS WASTE MANAGED DURING 1985, BY THE 50 LARGEST ACTIVE FACILITIES USING UNITS REGULATED UNDER RCRA



WASTE QUANTITIES AND NUMBER OF FACILITIES BY EPA REGIONS

Figure ES-2 shows the distribution of hazardous waste quantities managed at TSDRs by EPA region. Figure ES-3 shows the distribution of active TSDR facilities by EPA region.

MANAGEMENT TECHNOLOGIES BY FACILITY

Figure ES-4 summarizes the number of active facilities with "Treatment," "Storage," "Disposal," "Land disposal," and "Recycling" technologies. Because facilities may have more than one technology, the sum is more than 2,971. Eighty-seven percent of the TSDRs have "Storage" capability, the most common classification.

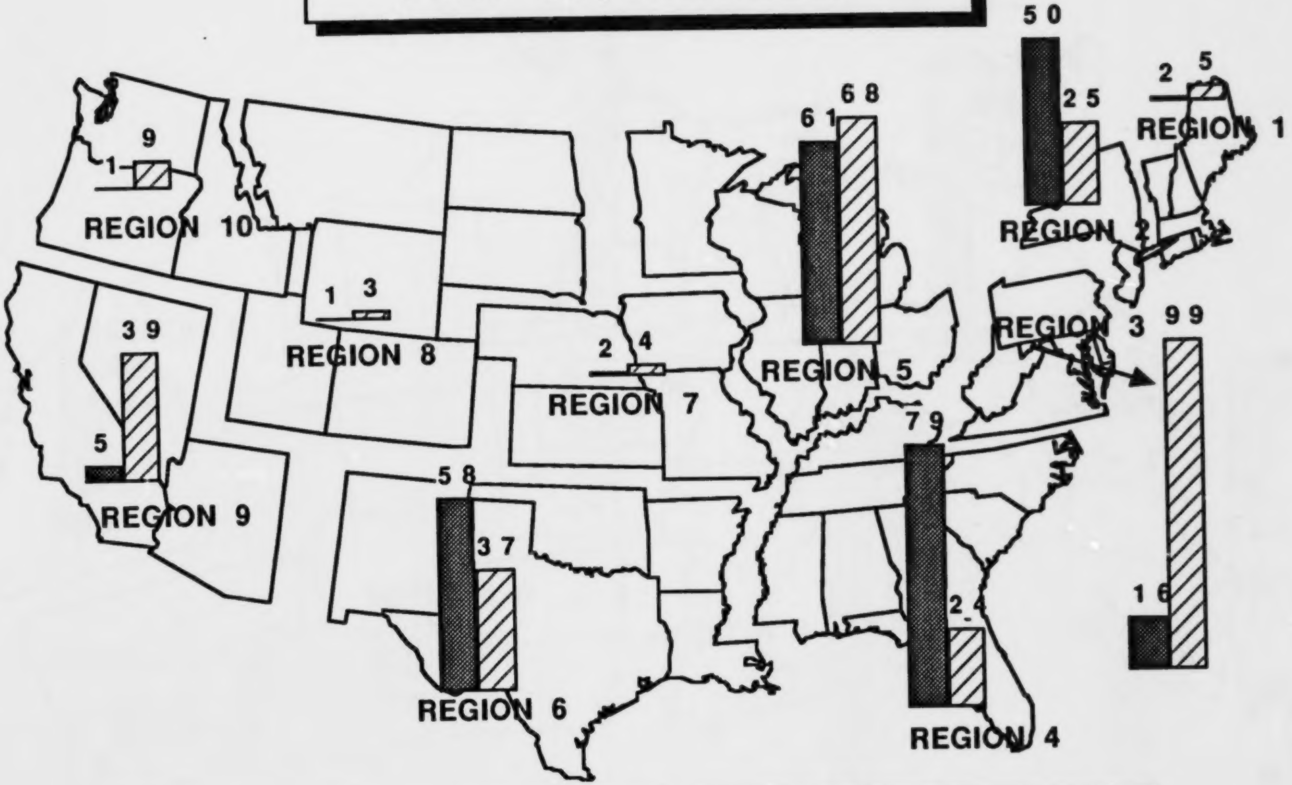
Figure ES-5 shows the number of active facilities with at least one "Treatment" technology, and divides "Treatment" into more detailed categories.

The number of facilities with active surface impoundments used for storage has declined since the Screening Survey was mailed in February 1986. Of all active facilities, 170 have "Storage impoundments," 48 have "Waste piles," and 2,585 utilize "Other storage." During the followup and verification stages, we determined that, for the majority of facilities, "Other storage" meant storage in containers and/or tanks.

Figure ES-6 shows those facilities that have "Land disposal" technologies onsite. These facilities were active in 1985; however, because of the continuing concern about land disposal, many companies are closing their land disposal units or reducing their reliance on them. Actual survey responses were compared with permit records in HWDMS to reflect the number of facilities that also submitted certification required by HWSA. Figure ES-6 reflects totals that have been adjusted for facilities that are formally closed or have approved closure plans.

Figure ES-7 includes active facilities that have at least one "Recycling" technology onsite. The numbers of active federal facilities with "Treatment," "Storage," "Land disposal," and "Recycling" facilities are depicted in Figure ES-8.

FIGURE ES-2 QUANTITY OF HAZARDOUS WASTE MANAGED BY ACTIVE FACILITIES DURING 1985, BY EPA REGION

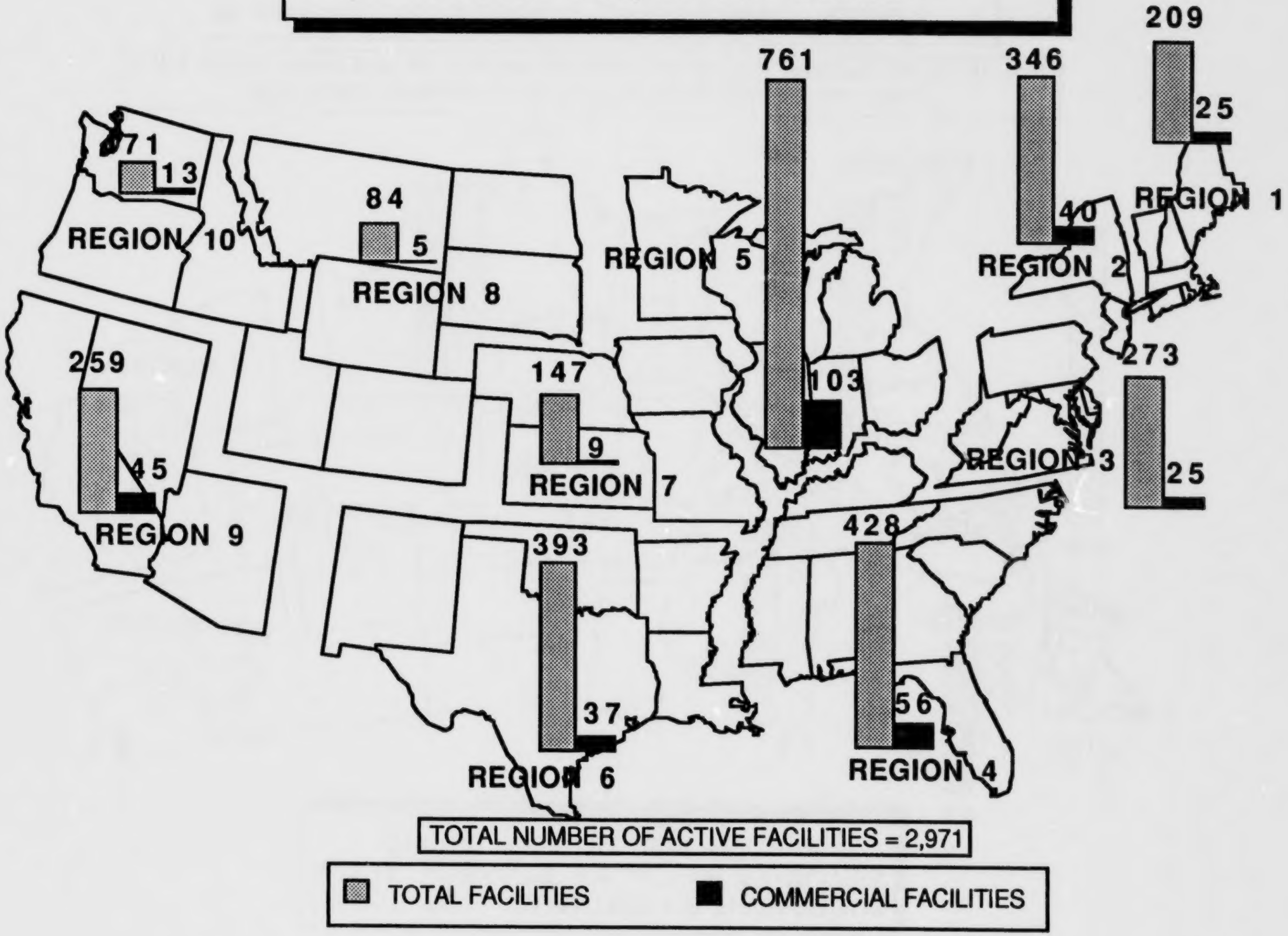

5 0
2 5
2 5
REGION 1
REGION 2
6 1
6 8
1
9
REGION 10
1
3
REGION 8
2
4
REGION 7
REGION 5
REGION 3
9 9
1 6
3 9
5
REGION 9
5 8
3 7
REGION 6
7 9
2
4
REGION 4

TOTAL WASTE MANAGED IN UNITS REGULATED UNDER RCRA = 272 MMT
TOTAL WASTE MANAGED IN UNITS EXEMPT FROM RCRA PERMITTING REQUIREMENTS = 311 MMT

■ UNITS REGULATED UNDER RCRA ▨ UNITS EXEMPT FROM RCRA PERMITTING REQUIREMENTS

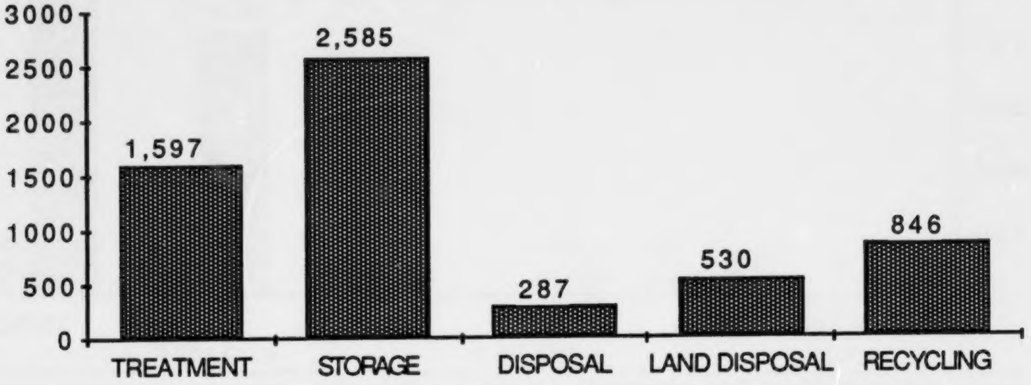
NOTE: Some waste may be managed in both regulated and exempt units. Consequently, the total amount of RCRA hazardous waste is less than the sum of waste managed in exempt and regulated units.

FIGURE ES-3 NUMBER OF ACTIVE FACILITIES DURING 1985, BY EPA REGION


71
13
REGION 10
84
5
REGION 8
259
45
REGION 9
147
9
REGION 7
393
37
REGION 6
761
103
REGION 5
428
56
REGION 4
346
40
REGION 2
273
25
REGION 3
209
25
REGION 1
TOTAL NUMBER OF ACTIVE FACILITIES = 2,971
▨ TOTAL FACILITIES
■ COMMERCIAL FACILITIES

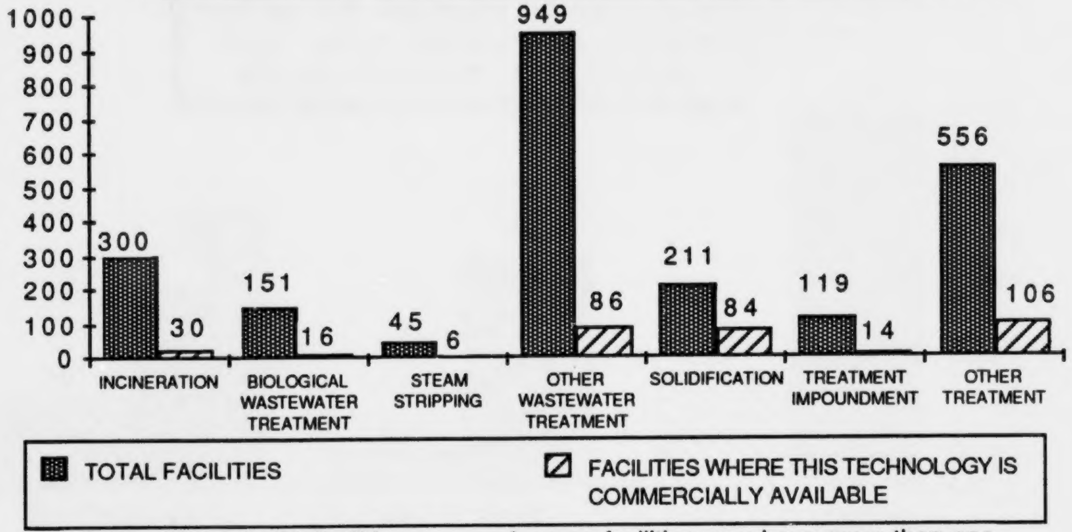
NOTE: Commercial facilities include those with at least one commercially available technology.

FIGURE ES-4 NUMBER OF ACTIVE FACILITIES DURING 1985, BY TYPE OF TECHNOLOGY



TOTAL NUMBER OF ACTIVE FACILITIES = 2,971

FIGURE ES-5 NUMBER OF ACTIVE FACILITIES DURING 1985, WITH TREATMENT TECHNOLOGIES



NOTE: Of the 2,971 facilities surveyed, some facilities may have more than one treatment technology and some facilities may have no treatment technology.

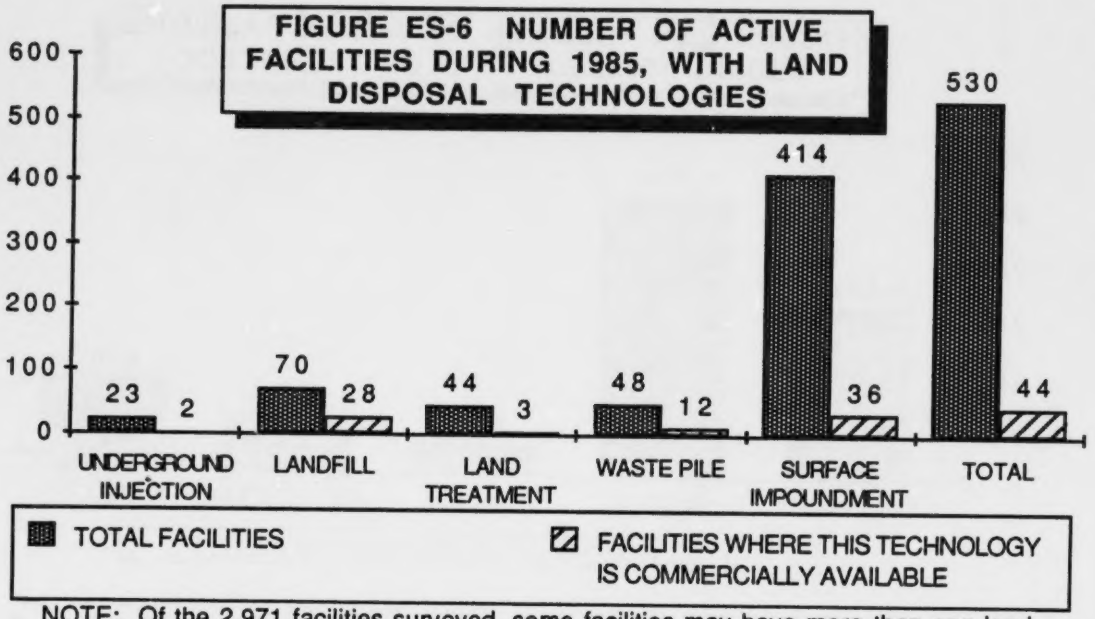


FIGURE ES-6 NUMBER OF ACTIVE FACILITIES DURING 1985, WITH LAND DISPOSAL TECHNOLOGIES

NOTE: Of the 2,971 facilities surveyed, some facilities may have more than one land disposal technology and some facilities may have no land disposal technology.

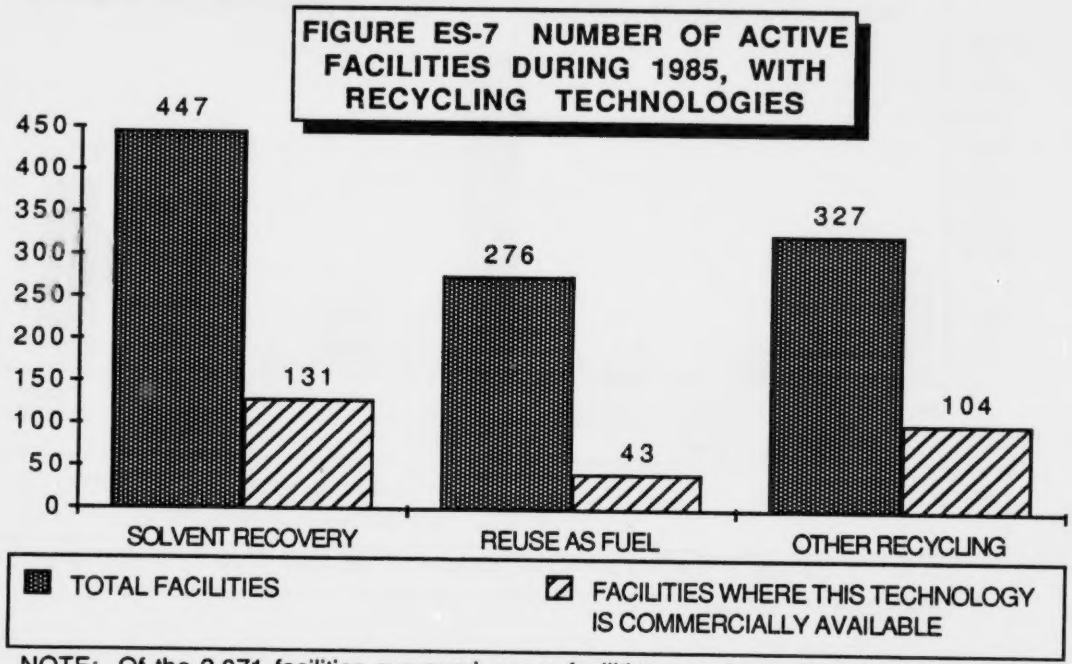
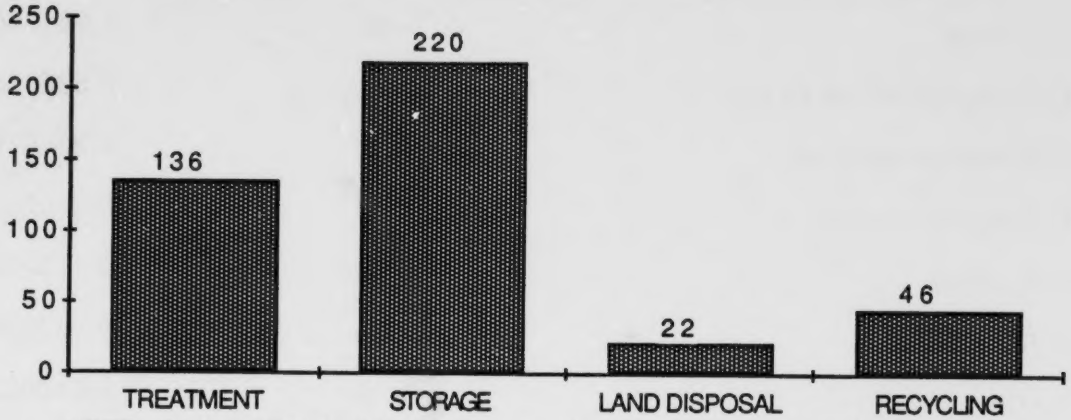


FIGURE ES-7 NUMBER OF ACTIVE FACILITIES DURING 1985, WITH RECYCLING TECHNOLOGIES

NOTE: Of the 2,971 facilities surveyed, some facilities may have more than one recycling technology and some facilities may have no recycling technology.

FIGURE ES-8 NUMBER OF ACTIVE FEDERAL FACILITIES DURING 1985, BY TYPE OF TECHNOLOGY



NOTE: Of the 237 federal facilities surveyed, some may have more than one type of treatment, storage, land disposal, or recycling technology, while others may have none.

COMMERCIAL STATUS OF MANAGEMENT TECHNOLOGIES

Facilities were asked to designate whether each technology was commercially available to the public. Commercial hazardous waste treatment does not have to be the primary activity at a facility for an individual operation or unit to be considered "commercially available." Of the 2,971 active facilities, 528 have at least one "Treatment," "Storage," "Disposal," or "Recycling" technology that is commercially available. The Screening Survey collected no information concerning the percentage of hazardous waste managed on a commercial basis, or whether commercial hazardous waste management is the facility's primary business.

FEDERAL FACILITIES

Table ES-3 shows the quantity of hazardous waste managed by federal agencies in units permitted under RCRA. All federal agencies account for 237 facilities or 8.0 percent of all active TSDRs in the nation. This table aggregates the individual federal facilities under their respective agencies by number of active facilities and regulated quantity.

The distribution of the hazardous waste quantities managed by active federal facilities according to EPA region is shown in Figure ES-9 Figure ES-10 shows the distribution of the number of active federal facilities by EPA region.

TABLE ES-3. QUANTITY OF HAZARDOUS WASTE MANAGED BY ACTIVE FEDERAL FACILITIES IN UNITS PERMITTED UNDER RCRA

AGENCY NAME	NUMBER OF FACILITIES	REGULATED QUANTITY (MMT)
U.S Navy	42	1.181955
U.S. Department of Energy	23	0.595965
CBI Federal Facilities	2	0.264676
U.S Marine Corps	8	0.212069
U.S. Army	70	0.173225
U.S. Air Force	66	0.063235
NASA	5	0.013022
*Stoller Chemical Co. Inc./MIIDIV	1	0.005443
Tennessee Valley Authority	3	0.005316
*NI Ind. Inc. Riverbank Plant	1	0.003148
U.S. Environmental Protection Agency	5	0.001353
U.S. Department of Defense	6	0.000514
National Institute of Health	2	0.000107
*Olin Corp.	1	0.000081
U.S Bureau of Reclamation	1	0.000002
National Institute of Environmental Health Science	1	0.000001
Total	237	3.092112

* Government contractor

FIGURE ES-9 QUANTITY OF HAZARDOUS WASTE MANAGED BY ACTIVE FEDERAL FACILITIES DURING 1985, BY EPA REGION

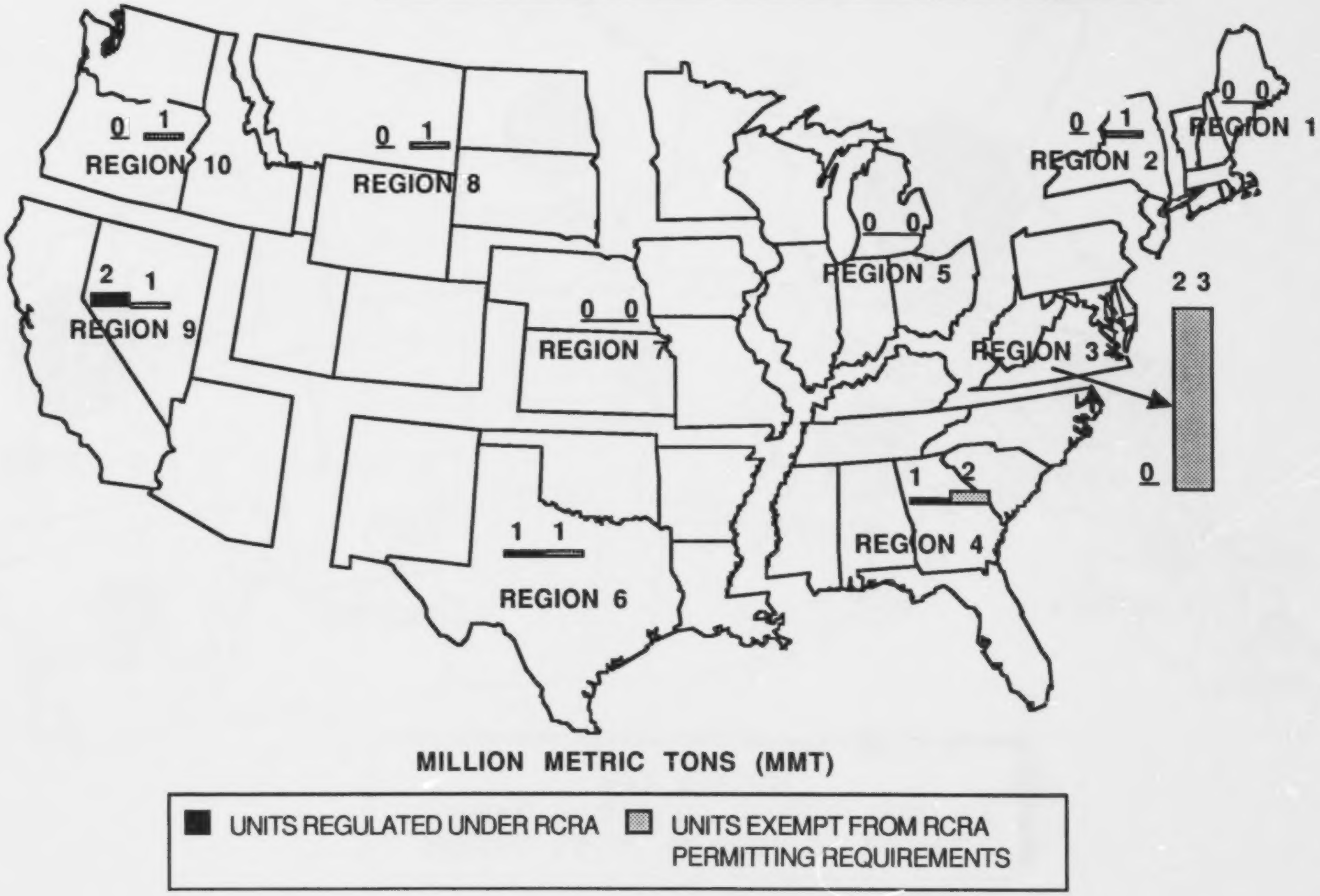
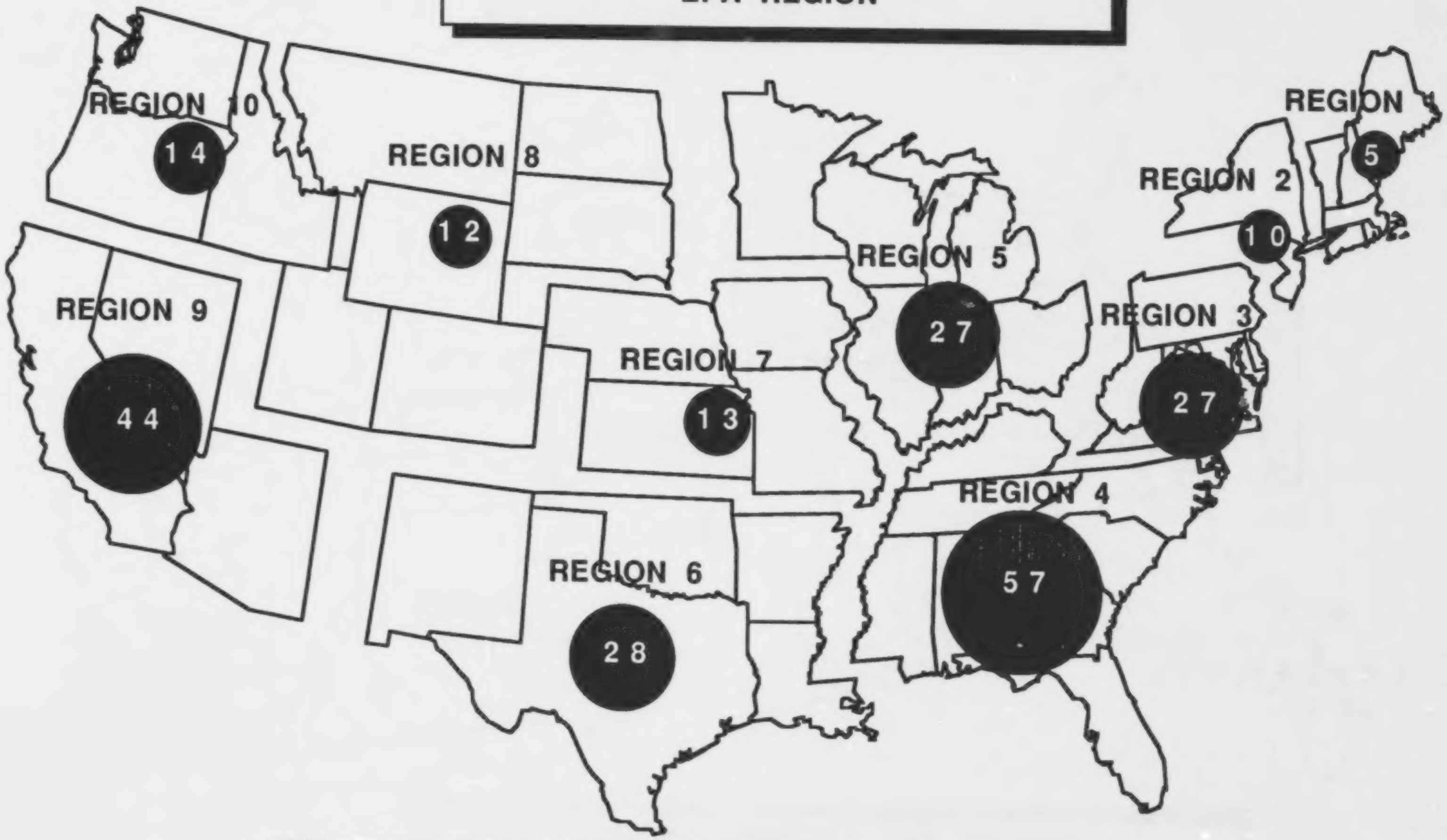

0 0
REGION 1
0 1
REGION 2
2 3
0
REGION 3
1 2
REGION 4
0 0
REGION 5
1 1
REGION 6
0 0
REGION 7
0 1
REGION 8
2 1
REGION 9
0 1
REGION 10
MILLION METRIC TONS (MMT)
UNITS REGULATED UNDER RCRA
UNITS EXEMPT FROM RCRA PERMITTING REQUIREMENTS

FIGURE ES-10 NUMBER OF ACTIVE FEDERAL FACILITIES DURING 1985, BY EPA REGION


REGION 10
14
REGION 8
12
REGION 9
44
REGION 7
13
REGION 6
28
REGION 5
27
REGION 4
57
REGION 3
27
REGION 2
10
REGION 1
5

TOTAL NUMBER OF ACTIVE FEDERAL FACILITIES = 237

CONCLUSIONS

The 1986 National Screening Survey results, though general in scope, provide some insights into the universe of TSDRs. There are far fewer active TSDRs than there were in earlier years. The hazardous waste management universe is dominated by very large onsite management facilities; the top 50 facilities manage 90 percent of the hazardous waste quantities. Based on our understanding of the industries generating hazardous waste and telephone verification, we consider the dominant hazardous waste category to be "Hazardous wastewater with low pH."

The quantities of hazardous wastes managed in units exempt from RCRA permitting requirements are greater than the quantities of hazardous wastes managed in units permitted under RCRA, largely due to the amount of hazardous wastewater treated and discharged under NPDES permits (exempt from RCRA permitting requirements).

FUTURE DATA COLLECTION ACTIVITIES

The 1986 National Screening Survey is serving as the basis for several additional data collection efforts being conducted by EPA's OSW. Using the data collected in the Screening Survey, a detailed survey was prepared and mailed to over 2,600 TSDRs in August 1987. This survey consisted of 16 individual booklets. A companion survey, the 1987 National Survey of Hazardous Waste Generators, was mailed to a sample of generators in late 1987. Approximately 10,300 generators of hazardous waste received this survey. Data from these two surveys will be available in 1989.

CHAPTER 1

INTRODUCTION

This report describes the results of the 1986 National Screening Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities (Screening Survey). The Office of Solid Waste (OSW) in the U.S. Environmental Protection Agency (EPA) conducted this Screening Survey to collect preliminary data necessary to select a sample for a more detailed follow-up survey, the National Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities. Respondents were required to complete the questionnaire under Section 3007 of the Resource Conservation and Recovery Act (RCRA) that authorizes collection of information for regulatory development purposes. The EPA retained the Research Triangle Institute (RTI) to conduct both surveys.

The EPA is performing these national surveys as part of its strategy to gather information on the nation's ability to treat, store, dispose, and recycle hazardous waste. The EPA has already used this information to identify facilities that have the technologies and the permits to manage certain types of hazardous waste that may be restricted from land disposal by the regulations implemented under RCRA of 1976, as amended by the Hazardous and Solid Waste Amendments (HSWA) of 1984. While national capacity to manage hazardous waste was the initial driving force behind this effort, best demonstrated available technology (BDAT) standards, analysis of treatment and disposal capacity by state for hazardous wastes required by the Superfund Amendment and Reauthorization Act (SARA), the potential revision of hazardous waste tank standards, and other numerous regulatory activities required information not available in existing data sources.

The Screening Survey was designed to identify and collect summary information from all hazardous waste treatment, storage, disposal, and recycling facilities (TSDRs) in the United States. These data were used to select a statistically valid sample of TSDRs for the more detailed follow-up survey, begun in late 1987. The information gathered in the Screening Survey describes the status, location, nature, and scope of the hazardous waste treatment, storage, disposal, and recycling activities onsite at each respondent facility.

The chapters in this report describe the development and administration of the Screening Survey. Chapter 2 provides an overview of the survey tasks, Chapter 3 describes questionnaire development and testing, Chapter 4 briefly summarizes survey administration, Chapter 5 presents results of analyses performed on the data, and Chapter 6 contains conclusions based on the analyses and a brief discussion of future data collection efforts. Appendix A includes a copy of the pretest version of the Screening Survey and Appendix B includes a copy of the final Screening Survey.

CHAPTER 2

OVERVIEW

In preparing to survey the U.S. hazardous waste TSDRs, the project team concluded that, given the then-current quality and quantity of available industry information, the most effective data-gathering effort would include two surveys of the respondent universe:

- an initial screening survey to identify and characterize the nature and scope of the operations onsite at each TSDR in the target population, and
- a follow-up survey to collect detailed technical information from a sample of the TSDRs identified by the Screening Survey.

The focus of the two surveys has been to gather supporting information for rulemaking and related efforts including:

- design and operating parameters, hazardous waste quantity and characterization, and other types of technical information on the nation's hazardous waste TSDRs,
- information for developing BDAT for the management of specific types of wastes,
- hazardous waste management capacity and hazardous waste quantities for determining land disposal capacities and for use in the state capacity certifications required under SARA,
- air emissions control information for rulemaking on TSDR air emissions by EPA's Office of Air Quality Planning and Standards (OAQPS),
- specifications for hazardous waste tank systems for possible tank requirement revisions,
- revisions to underground injection well standards, and
- data to support the development of Regulatory Impact Analyses (RIAs) for the land disposal restrictions rule.

The survey was initially intended to be a census of an estimated 500 commercial hazardous waste management facilities. As the implications of the HSWA became apparent; however, EPA realized the need to survey both commercial and noncommercial facilities. The Screening Survey, a short census survey of all potential TSDR facilities, was designed to be followed in 1987 by a detailed survey of a sample based on the results of the Screening Survey. After reviewing available data bases of the universe of facilities that were thought to be TSDRs, the project team determined that the completeness of the initial data base would affect the team's ability to draw an adequate sample. Consequently, the follow-up effort was changed to a *census* of treatment, disposal, and recycling facilities and a *sample* of storage facilities.

The following sections in this chapter describe the survey objectives, provide an overview of the tasks required to conduct the survey, summarize how the respondent universe was identified, describe specific data-collection objectives, and outline data-protection procedures.

2.1 SURVEY OBJECTIVES

The project team administered the Screening Survey primarily to help identify the respondent universe for a more detailed follow-up survey. Consequently, the Screening Survey was designed to gather data to characterize the survey population with a high level of precision, to identify the parameters required for selecting a sample for the follow-up survey, and to provide the most current available data on facility names, contacts, and addresses.

The Screening Survey had the following major objectives:

- **To gather current information that would uniquely identify the name, location, ownership, operating status, and commercial availability of every TSDR in the country.** Firms frequently change ownership or contact persons making communication difficult or impossible. Permitted and Interim Status firms may not be actively managing hazardous wastes; some firms maintain their status even though hazardous waste operations have ceased temporarily or permanently.

- **To gather information to characterize the type, scope, and nature of the hazardous waste and the hazardous waste treatment, storage, disposal, and recycling operations onsite at each TSDR in the country.** This information was used to develop the statistical sampling procedures for selecting the sample for the detailed follow-up survey. The data collected during the Screening Survey allowed stratification of the detailed survey sample frame based on facility size and types of operations. Stratifying based on size allowed selection of the facilities of greatest interest for the follow-up survey.

- **To gather information to use in regulatory development. Most regulations require background information documents, investigation of enforcement and sampling methods, and cost estimations before promulgation.** There is no national data base for the TSDRs that contains information collected in the Screening Survey.

- **To begin to understand the relationship between hazardous wastes managed in units exempt from RCRA permitting requirements and hazardous wastes managed in units regulated under RCRA.** Some RCRA-listed wastes are handled in treatment technologies exempt from RCRA regulation. Some states are more stringent than the federal government in regulating the wastes within their boundaries and require certain non-RCRA wastes to be managed in the same fashion as RCRA wastes. The exact relationships are not accurately known.

2.2 TASK OVERVIEW

The Screening Survey required six tasks:

- Task 1. Define the Respondent Universe—Identify to whom the Screening Survey should be mailed.

- Task 2. Develop Data Collection Objectives—Identify what information should be collected during the Screening Survey.

- Task 3. Develop and Test Questionnaire—Write a survey instrument that will achieve objectives developed in Task 2 and demonstrate its validity in a small-scale pretest with survey respondents.

- Task 4. Develop Data Base System—Store and use data collected during the Screening Survey including methods of insuring confidentiality when necessary.

- Task 5. Administer the Survey.

- Task 6. Analyze the Data.

The following sections briefly address tasks one, two, and four; subsequent chapters address the other three tasks.

2.3 INITIAL TASKS

Before developing, testing, and administering the Screening Survey, the project team first developed a comprehensive list of all the active TSDRs in the United States, decided what types and amounts of information should be collected from them, and developed procedures to protect any information claimed as confidential by survey respondents. The following subsections briefly describe these three initial tasks.

2.3.1 Defining the Respondent Universe

To define the respondent universe, the project team assembled the best information available on the current population of both commercial and noncommercial TSDRs in the United States and developed a single, comprehensive list of facilities from the following sources of data:

- EPA's Hazardous Waste Data Management System (HWDMS) containing Part A of the RCRA waste management permit applications filed by TSDRs
- Biennial Reports, which all RCRA-permitted TSDRs must file either with the states or with EPA
- Directories of commercial hazardous waste TSDRs:
  - *Hazardous Waste Consultant,* Volumes 1-5, 1983-1985, published by McCoy and Associates Inc., 1313 W. Cedar Drive, Lakewood, Colorado 80228
  - *Industrial and Hazardous Waste Management Firms, 1985,* published by Environmental Information Ltd., 7400 Metro Blvd., Suite 400, Minneapolis, Minnesota 55435
  - *Hazardous Waste Services Directory, 1985,* J.J. Keller and Associates, Inc., 145 W. Wisconsin Ave., Neenah, Wisconsin 54956

In order to create a single, comprehensive mailing list, the project team merged relevant data from each of these sources, eliminated duplicate entries, matched corresponding partial entries, and researched discrepancies among similar entries. This initial list contained 5,505 hazardous waste TSDRs, including both commercial and noncommercial facilities. Through additional research 101 facilities were added to bring the final total to 5,666 facilities.

2.3.2 Developing Data-Collection Objectives

The project team developed data-collection objectives based on the general survey objectives described in Section 2:

- Identify the operating status of every TSDR in the United States.
- Identify the following quantities of hazardous waste managed in units regulated under RCRA:
  - total quantity managed onsite (i.e., treated, stored, or disposed),
  - total quantity disposed onsite,
  - total quantity treated onsite, and

  - total quantity stored onsite, including the quantity accumulated in storage areas for fewer than 90 days.

- Identify the following quantities of hazardous waste managed in units that are not permitted under RCRA:
  - total quantity managed (i.e., treated or recycled) onsite,
  - total quantity treated onsite, and
  - total quantity recycled onsite.

- Identify what percentage of each waste quantity reported was considered hazardous by federal (as opposed to state) regulations. Previous surveys have not asked for state-regulated hazardous waste quantities. Because these wastes do compete for available capacity to manage all hazardous wastes, it is important to identify state-regulated hazardous waste quantities.

- Identify general types of hazardous waste managed onsite.

- Identify general types of treatment, storage, disposal, or recycling technologies used onsite.

- Identify which treatment, storage, disposal, or recycling technologies are used to manage which types of hazardous waste onsite.

- Identify which treatment, storage, disposal, or recycling technologies are offered commercially onsite.

- Accurately identify
  - EPA facility identification (ID) number,
  - company name,
  - location, and
  - name, title, telephone number, and mailing address of a person for future survey-related contacts.

2.3.3 Developing Data-Protection Procedures

All surveyed firms and facilities had the right, under law, to request that the information they submitted during the Screening Survey be treated as Confidential Business Information (CBI). The cover letter (and addenda) mailed with each questionnaire specifically addressed how, and when, respondents could claim CBI status for their completed questionnaires and how, and to whom, EPA could release CBI for data processing and analysis. To ensure the protection of any CBI data that might be submitted during the survey, the project team developed detailed procedures, in accordance with EPA regulations, that specify how CBI data should be protected, including who can and should be cleared to view and handle those data and how the data should be protected in both hard-copy and electronic forms.

CHAPTER 3

QUESTIONNAIRE DEVELOPMENT AND TESTING

To develop the Screening Survey questionnaire, the project team prepared different draft questionnaires over a 12-month period. Each of these draft instruments was subject to intense technical and format reviews by EPA staff. Several were reviewed by industry and trade association representatives and, during a small-scale pretest, by management and technical personnel at a few selected TSDRs in the respondent universe.

The following two sections briefly describe how the Screening Survey questionnaire was developed and tested during these reviews and subsequent discussions. A final section summarizes the form and intent of the seven questions in the version of the questionnaire that was mailed to respondents during the Screening Survey.

3.1 QUESTIONNAIRE DEVELOPMENT

To develop the Screening Survey questionnaire, the project team drafted a set of questions to identify and characterize TSDRs; these questions were reviewed by staff members in several different offices within EPA. The primary purpose of these reviews was to ensure that the Agency's rulemaking information needs would be met to the maximum extent possible by the information gathered using the Screening Survey questionnaire.

After each internal review, the project team assembled all the comments from EPA staff who had reviewed the questionnaire; then the project team assessed the comments, resolved any issues, and prepared a new draft for additional reviews, as necessary. The lead office, the OSW, reviewed every draft. Other EPA offices that reviewed selected drafts and portions of drafts included the OAQPS, the Office of Policy, Planning, and Evaluation (OPPE), and the Office of Emergency and Remedial Response (OERR).

The project team also solicited comments from industry and trade association representatives. The general purpose of these reviews was to improve the questionnaire, to establish a working relationship with appropriate industry and trade associations, and to obtain their support for the survey. The project team arranged these industry reviews to help ensure that the questions:

- could be answered using data available onsite at each TSDR in the respondent universe,
- were asked using language that is understandable and familiar to the persons likely to complete the questionnaires at TSDRs, and
- would be answered by the respondent facilities to ensure that they would not refuse to answer the questions for legal or technical reasons.

The following industry trade associations participated in the review process:

- Chemical Manufacturers Association (CMA),
- National Association of Solvent Recyclers (NASR),
- Institute for Chemical Waste Management (ICWM) of the National Solid Waste Management Association (NSWMA),
- Hazardous Waste Treatment Council (HWTC), and the
- American Petroleum Institute (API).

3.2 PRETEST OF DRAFT QUESTIONNAIRE

As an extension of the questionnaire development process, the project team also conducted a small-scale pretest of the survey instruments and data-collection procedures to test their ability to accomplish their intended purposes. The following subsections discuss the pretest objectives, facility selection and testing procedures, and pretest results.

3.2.1 Pretest Objectives

The overall objective of the pretest was to test the ability of the survey instrument and data collection procedures to gather the required information. Specifically, the pretest had the following major objectives:

- To measure the extent to which the instruments and procedures could collect information that met the objectives of the analysis plan.
- To test the ability and willingness of the respondent facilities to provide the information sought in three categories:
    1. Questions that ask for information unavailable to the respondents. For example, was the requested information routinely kept in respondent files and was it stored in the form requested?
    2. Questions the respondents could not understand. For example, was the terminology used in the survey similar to what the respondents used to describe their treatment, storage, disposal, or recycling operations?

3. Questions that might mean one thing to the EPA but something quite different to respondents. For example, would respondents understand the use of the term "commercially available" as it was defined in the questionnaire?

3.2.2 Facility Selection and Testing Procedures

Facility Selection. After the project team had developed a final draft version of the Screening Survey questionnaire based on industry and EPA staff comments and discussions, RTI contacted nine hazardous waste TSDRs by mail and asked them to participate in a voluntary pre-survey test of the data-collection instruments and procedures. The letter mailed to each facility informed the personnel of the background and objectives of the survey, identified a timeframe for the pretest, requested their participation, and informed them that they would be contacted soon about their willingness to participate.

Each facility was told it would not have to complete another questionnaire during the actual Screening Survey if it submitted a completed questionnaire during the pretest. The facility would, however, be contacted by telephone during the survey to confirm its earlier pretest responses.

Within a few days, the project team followed up the initial letter with a telephone call to each facility requesting its participation in the pretest. After identifying the nine participants and whether they would participate in person or by telephone, the project team identified when each facility would be able to discuss its completed questionnaire. The project team then scheduled and began conducting the pretest discussions.

The nine facilities contacted for the pretest were chosen at random from among TSDRs within a 1-day drive of Research Triangle Park, North Carolina, where the project team was developing the final questionnaire. Of the nine facilities contacted, three agreed to conduct onsite personal interviews with the project team, five agreed to discuss the questionnaire over the telephone with the project team, and one declined to participate.

Testing Procedures. To assess whether the questionnaire met the objectives describes in Section 3.2.1, each pretest discussion addressed three topics:

- Adequacy of the information provided on the background and objectives of the Screening Survey.
- A review of each respondent's completed questionnaire to determine whether each question had been understood and answered accurately.
- General impression from respondents regarding the form of the questionnaire. This included discussions of definitions, question layout and ordering, and type styles, sizes, and treatments.

In addition, each pretest discussion usually included a description (on the telephone) or a tour (in-person interviews) of the operations at each pretest facility.

3.2.3 Pretest Results

Of the eight facilities whose staffs agreed to discuss the questionnaire with the project team, four actually submitted their questionnaires during the pretest . The other four pretest facilities completed their questionnaires only for the purpose of the pretest discussion. The results of the pretest discussions indicated a need for changes in both the form and content of the screening questionnaire. The pretest questionnaire is in Appendix A. The following paragraphs summarize the changes made to the pretest questionnaire. The page numbers given refer to those on the final questionnaire:

Cover (page 1)—Information on background and objectives of survey. The project team made wording changes to simplify the language and modified the mailing label format to exclude Standard Industrial Classification (SIC) codes. Also, a formal question was added requiring the correction of any erroneous identification and address information in a formal question rather than by asking respondents to make changes on the label (see Question 7, Page 7). On the final questionnaire, the mailing label and instructions were moved to the cover page.

Page 2—Definitions. The project team deleted several definitions that the pretest experience indicated were not needed and added others that were. In addition, the amount of space devoted to definitions was expanded to make them easier to find and read.

Page 3—Question 1. The project team added a fifth status option to address the various possible stages of facility closure that surfaced during the pretest and changed the skip pattern instructions to direct respondents to a list of information under the heading "Important Note."

Page 3—First "Important Note." Also added to this page was a series of clarifying statements in the form of an "Important Note." These clarifications included explanations of whether and how to report several types of hazardous waste treatment and recycling operations and several types of hazardous waste.

Page 4—Questions 2 and 3. In addition to making several wording changes to further clarify how respondents should answer these questions, the project team reordered the overall question format so that the explanatory notes would appear before, rather than after, the answer spaces.

Page 5—Second "Important Note." In response to several questions that surfaced during the pretest, the project team added a second "Important Note" to clarify what types of treatment and recycling operations and should be considered "exempt from RCRA permitting requirements," including certain types of hazardous wastewater treatment and solvent recycling operations.

Page 5—Questions 4 and 5. The project team made several wording changes to clarify Questions 4 and 5 and also reordered the question formats so that the explanatory notes would appear before, rather than after, the answer spaces.

Page 6—Question 6. The project team made several wording and format changes to this question. First, the question itself was rewritten and reformatted. Second, the various headings in the matrix were rewritten to better label each column. Third, the row in which respondents indicate the units that are not used to manage hazardous waste onsite was relocated from the bottom of the matrix to the top. Fourth, the commercial status question was moved to the last columns. And, fifth, a series of explanatory notes was added to the bottom of the matrix to clarify how respondents should report certain kinds of hazardous waste management operations.

Page 7—Question 7. This question was expanded specifically to direct respondents to correct or supplement the facility identification, contact, and location information contained on the mailing label pasted on the front of each questionnaire.

3.3 SCREENING SURVEY QUESTIONNAIRE

The final version of the screening questionnaire was designed to collect four types of information from each respondent facility:

- Question 1—Facility operating status,
- Questions 2, 3, 4, and 5—Waste quantity,
- Question 6—Waste management capability, and
- Question 7—Facility identification and location.

The following subsections describe the screening questionnaire's various parts, including its seven questions, in terms of the information collection objectives listed above. Appendix B contains a copy of the final Screening Survey questionnaire.

3.3.1 Cover Page

In addition to displaying the facility identification label, the cover (Page 1) of the screening questionnaire presents several types of information designed to anticipate specific questions from respondents. The "Introduction" provides administrative information.

3.3.2 Definitions

The definitions section of the questionnaire (Page 2) contains definitions of key terms developed specifically for this survey. While they are not legal definitions, they are derived from definitions of similar terms in the *Code of Federal Regulations*.

3.3.3 Important Notes

These notes contain information that should help the respondent interpret the language in Questions 2, 3, 4, and 5—especially the difference between treatment and recycling operations and the difference between units regulated under RCRA and units exempt from RCRA permitting requirements.

3.3.4 Question 1—Facility Status

The first question asks respondents to give the current operating status of their respective facilities by circling the number next to one of five options:

1. This facility currently treats, stores, disposes, or recycles hazardous wastes.
2. This facility is planned or under construction and has not yet opened.
3. At one time this facility treated, stored, disposed, or recycled hazardous waste, but it has ceased ALL such hazardous operations and has closed ALL its hazardous waste treatment, storage, disposal and recycling units.
4. This facility is either (a) a permitted facility that has notified the EPA Regional Administrator that it plans to close ALL its hazardous waste treatment, storage, disposal, or recycling units or (b) an interim status facility that has submitted a closure plan for ALL its treatment, storage, disposal, or recycling units.
5. This facility has not treated, stored, disposed, or recycled hazardous waste since November 19, 1980, when hazardous waste became regulated under RCRA.

The information provided in response to this question helped refine the data base on U.S. facilities by eliminating those that no longer manage hazardous waste and by identifying those with immediate plans to close or open.

How this question is answered determines whether a respondent is routed through Questions 2, 3, 4, 5, and 6 or sent directly to Question 7, which asks for identification and location information. In general, only facilities that have closed and those that have not managed hazardous waste since RCRA was enacted were routed directly to Question 7.

3.3.5 Questions 2 and 3—Hazardous Waste Quantities Managed in Units Regulated Under RCRA

Questions 2 and 3 both ask for information on the quantities of hazardous waste that were managed onsite during 1985 using technologies or units that are regulated under RCRA. Although Questions 2 and 3 ask for the same types of information, they differ in one important respect—how they ask a respondent to count and report waste that is managed using more than one type of technology. Question 2 asks for hazardous waste quantity information on a whole facility basis and specifically instructs respondents to report hazardous waste managed in more than one manner only once (e.g., hazardous waste that was treated twice or both stored and treated); Question 3 asks for the same information on a technology-type basis and specifically requires reporting of each type of hazardous waste technology under treatment, storage, or disposal of hazardous waste. Respondents were to count only once hazardous waste going to more than one storage, treatment, or disposal system.

Question 2 asks for types of information on the total quantity of hazardous waste that was managed onsite during 1985 in units regulated under RCRA. The responses to this question helped determine the size of each facility and the regulatory status of the hazardous waste managed onsite in units that are regulated under RCRA. Question 3 asks for information on the individual quantities of hazardous waste that were treated, stored, or disposed onsite using units regulated under RCRA. The responses to this question helped determine the size of each facility's treatment, storage, and disposal operations and the regulatory status of the hazardous waste managed onsite in units that are regulated under RCRA.

3.3.6 Questions 4 and 5—Hazardous Waste Quantities Managed in Units Exempt from RCRA Permitting Requirements

While Questions 2 and 3 ask for information on the quantities of hazardous waste that were managed onsite during 1985 using units regulated under RCRA, Questions 4 and 5 ask for information on the quantities of hazardous waste that were managed onsite during 1985 using units that are *exempt* from RCRA permitting requirements (i.e., units for which facilities do not need a RCRA Part A or Part B permit or interim status). Questions 4 and 5 differ from one another in one important respect—how they ask a respondent to count and report hazardous waste that is managed using more than one type of technology. Question 4 asks for hazardous waste quantity information on a whole-facility basis and specifically instructs respondents to report hazardous waste managed in more than one manner only once (e.g., hazardous waste that was treated twice or both treated and recycled). Question 5 asks for the same information on an technology-type-specific basis and specifically requires reporting hazardous waste that was treated and recycled in each category.

Question 4 asks information on the total quantity of hazardous waste that was managed (treated or recycled) onsite during 1985 using units exempt from RCRA permitting requirements. The responses to this question helped determine the size of each facility and the regulatory status of the hazardous waste treated or recycled onsite in units that are exempt from RCRA permitting requirements. Question 5 asks for information on the individual quantities of hazardous waste that were treated or recycled onsite using units exempt from RCRA permitting requirements. The responses to this question helped determine the size of each facility's treatment and recycling technologies and the regulatory status of the hazardous waste managed onsite in units exempt from RCRA permitting requirements.

3.3.7 Question 6—Hazardous Waste Management Capability

Although it is probably the most complex-looking question in the questionnaire, Question 6 has the most straightforward objective—to identify what types of technologies each facility has onsite to manage hazardous hazardous waste, what general types of hazardous waste are managed using each unit, and whether each unit is available commercially. This information is among the most useful collected with the Screening Survey for deciding what kinds, and sizes, of facilities should be included in the sample for the detailed follow-up survey and for use in regulatory development.

3.3.8 Question 7—Facility Identification and Location

This question first asks respondents to confirm or correct the information listed in the facility identification label pasted on the front of the questionnaire, then it asks for the name, title, and telephone number of the missing information.

CHAPTER 4

SURVEY ADMINISTRATION

4.1 INTRODUCTION

The initial mailing of 5,505 screening questionnaires was conducted during the week of February 20-26, 1986. A receipt control system containing unique computer software, data files, and procedures specifically designed for the Screening Survey was used to track all aspects of the survey and to retain a file history for each facility.

The project team also established a toll-free survey helpline service for the Screening Survey to help respondent facilities complete their questionnaires. This line solved many problems and greatly reduced the need for follow-up phone calls.

4.2 DATA-COLLECTION PROCEDURES

The data-collection procedures implemented in this Screening Survey were more intensive than those normally used. In response to EPA's desire to have a complete data base of all U.S. hazardous waste TSDRs, extra effort was taken to obtain the maximum possible response to this Screening Survey. In between two separate mailings of the questionnaire, a thank you/reminder letter was mailed. The second mailing was followed by two telephone promptings; near the end of the second telephone follow-up, a reminder letter was mailed to nonresponders.

The thank you/reminder letter was mailed on March 10, 1986, 12 days after the end of the first mailout. The second mailing of the questionnaire was made on April 14 and 15, 1986, to 1,361 facilities whose questionnaires had not been received by April 15, 1986.

Undeliverables were given to technical interviewers who contacted the facility using the system phone number, directory assistance, the state agency responsible for hazardous waste facilities, the regional offices and, occasionally, the Federal Bankruptcy Court to obtain contact information. Eventually, all facilities were traced.

Opening and processing returned questionnaires began on March 17, 1986, and continued on a regular basis. Any questionnaires having data that was claimed as CBI were logged in and immediately placed in a locked filing cabinet until processing. All completed questionnaires were manually and machine edited for legibility of responses, missing and multiple responses, and correct entry of contact information. Editors also examined questionnaires for any notes or explanatory information. These notes were then marked for inclusion into the facility's permanent file.

After allowing 2 months for receipt of completed questionnaires, a telephone prompting effort was made to improve upon the response rate. A total of 925 facilities was included in the first telephone prompting, and a significant number either filled out their questionnaire or dictated their responses over the telephone.

Approximately 1 month after the initial telephone interview, those facilities that had promised and failed to return the questionnaire by a certain date were contacted a second time. The telephone interviewers called 160 facilities in the second prompting.

On July 1, 1986, a final reminder letter was mailed to approximately 100 facilities that had not returned a completed questionnaire. All these facilities had received two mailings of the questionnaire and a telephone prompting. Many had also received a second telephone prompting.

Facilities that either explicitly refused to complete the questionnaire, or that had been prompted by telephone and had not returned a completed questionnaire, were sent a letter referring to EPA's authority under Section 3007 of RCRA requiring the respondent to complete the questionnaire. All facilities eventually responded. Constant follow-up by staff members resulted not only in eventually accounting for all original facilities in the data base, but it also added a significant number of facilities to the system. The survey follow-up activities are summarized in Table 4-1.

TABLE 4-1. SCREENING SURVEY FOLLOW-UP EFFORTS

ACTIVITY	DATE (1986)	FACILITIES INVOLVED
Initial mailing	February 20-26	5,505
Facilities added during survey	----	161
Total receiving survey		5,666
Reminder letter mailed	March 10	5,505
Second mailing	April 15-16	1,361
First telephone prompt	May 1	925
Second telephone prompt	May 16	160
Final reminder	July 1	100
Final telephone contact of refusals/nonrespondents begun	July 17	52
Last facility completed	August 12	

4.3 DATA-COLLECTION RESULTS

The project team used significant resources to maximize the response rate to this Screening Survey and to enhance the data quality of the resultant data base. Information was obtained on 100 percent of the facilities included in the survey. Beyond EPA's authority under Section 3007, this high response rate is attributed to the aggressive mail and telephone follow-up and the simplicity of the questionnaire. Table 4-2 presents the final data-collection results of the survey. The 5,666 facilities in the Screening Survey data base include the original 5,505 facilities and the 161 additional facilities that were located subsequent to the initial mailing.

The facilities counted as active in Table 4-2 are those that were actively treating, storing, disposing, or recycling hazardous waste in at least part of 1985. This also includes facilities that managed hazardous waste quantities in 1985 but were in the process of closing their hazardous waste operations. Active facilities also includes those that were active in the first half of 1986 but not in 1985. They are included in all facility counts but did not contribute any quantity to that managed in 1985. Facilities that were in the process of closing, but managed no hazardous waste quantities in 1985, are included with the inactive facilities. Inactive facilities also included those that:

- have closed their TSDR capabilities and managed no hazardous waste in 1985,
- were never a TSDR facility,
- only have management units that are exempt from RCRA permitting requirements,
- manage wastes regulated as hazardous under state law and manage no federally regulated hazardous waste,
- only have 90-day accumulation, or
- were no longer in business.

Two additional telephone follow-ups have been conducted to verify status and response. They were done in October 1986 and January 1987.

TABLE 4-2. SCREENING SURVEY DATA COLLECTION RESULTS

STATUS	COUNT	PERCENT
Completed questionnaire, active	2,971	52.5
Completed questionnaire, inactive	2,452	43.3
No longer in business	183	3.2
Included in error (duplicates, etc.)	60	1.0
Refusal	0	0.0
Total	5,666	100.0

CHAPTER 5

ANALYSIS OF DATA COLLECTED

5.1 INTRODUCTION

This chapter reviews the data collected in the Screening Survey and provides a discussion of the results and factors affecting them. Data are presented on a national and regional basis, by regulatory status, by commercial status, and by available technologies. These results include only those facilities that were *active* in 1985 or were actively managing hazardous waste when they answered the questionnaire in the first half of 1986. Facilities not active and not included in these results include those that:

- have closed their TSDR capabilities and managed no hazardous waste in 1985,
- were never a TSDR facility,
- only have management units that are exempt from RCRA permitting requirements,
- manage wastes regulated as hazardous under state law and manage no federally regulated hazardous waste,
- only have 90-day accumulation, or
- were no longer in business.

Facilities were asked to designate whether each technology was commercially available to the public. This was done on a technology basis rather than a facility basis. Commercial hazardous waste treatment does not have to be the primary activity at a facility for an individual operation or unit to be considered "commercially available." All facilities fall into one of three categories:

- All technologies are commercially available.
- No technologies are commercially available.

- Some technologies are commercially available and some are used for management of hazardous waste generated onsite.

The implications of this designation scheme are discussed in Section 5.6, "COMMERCIAL STATUS OF MANAGEMENT TECHNOLOGIES."

EPA's last major survey of hazardous waste TSDRs was conducted in 1982 to collect data for 1981. Using that survey, EPA estimated 264 million metric tons (MMT) of hazardous waste were managed in regulated units at TSDR facilities in 1981. Estimates from the Screening Survey for 1985 are 272 MMT. However, it is not possible to make direct comparisons between the 1981 survey and the 1985 survey because there have been major changes in the hazardous waste universe since 1981. Some of these changes include:

- The universe of solid hazardous wastes that are considered hazardous has changed. Additional hazardous wastes have been listed and others have been delisted .
- The type of facilities regulated under RCRA has changed. Tighter restrictions on land disposal facilities caused a significant number of facilities to modify or cease their hazardous waste operations in anticipation of the regulations.
- Some small quantity generators that were not regulated in 1981 are now being regulated.
- The nation's economic output affects the generation of hazardous waste. The level of this output is different from year to year; for example, 1985 had a higher output than 1981.
- HSWA of 1984 appear to be having a significant impact on hazardous waste management and have affected the 1985 results.
- The quantities of hazardous wastewater have such a significant effect on national estimates of hazardous waste managed that a change or misreporting at only a few facilities can cause a large shift in estimated quantities.

5.2 NATIONAL HAZARDOUS WASTE QUANTITIES

Table 5-1 shows the quantity of hazardous waste managed by all active facilities (as defined in Section 5.1) in the United States during 1985.

A facility is a TSDR facility if it has RCRA regulated technologies. There are many generators that manage hazardous wastes in exempt technologies only, e.g., tanks regulated under the Clean Water Act. This Screening Survey includes only those TSDRs which manage hazardous wastes in at least one regulated technology. The quantities illustrated in Table 5-1 do not represent the entire universe of hazardous waste managed in units exempt from RCRA permitting requirements. The large quantity of hazardous wastes managed by facilities not permitted by RCRA is not included in this table.

Of the total 272 MMT, 267 MMT is classified as hazardous under federal RCRA regulations and 5 MMT is classified as hazardous under state but not federal regulations. The most common example of waste that is hazardous under state regulation and not under federal regulation is waste or used oil.

TABLE 5-1. QUANTITY OF HAZARDOUS WASTE MANAGED BY ACTIVE FACILITIES DURING 1985 (MILLION METRIC TONS)

	UNITS REGULATED UNDER RCRA	UNITS EXEMPT FROM RCRA PERMITTING REQUIREMENTS*
HAZARDOUS UNDER FEDERAL REGULATIONS	267	184
HAZARDOUS UNDER STATE REGULATIONS	5	127
TOTAL	272	311

* Primarily wastewater treatment in tanks prior to discharge 1) to a publicly owned treatment works (POTW) or 2) under a National Pollutant Discharge Elimination System (NPDES) permit.

Respondents also provided the quantity of hazardous waste that was managed in units exempt from RCRA permitting requirements. A total of 311 MMT is managed in units exempt from RCRA permitting requirements, with 184 MMT hazardous under federal regulations and 127 MMT hazardous under state regulations. The relatively large amount classified hazardous under state regulations and handled in units exempt from RCRA permitting is thought to be managed in two common hazardous wastewater treatment technologies: skimming waste or used oil from large quantities of hazardous wastewater and neutralization of corrosive hazardous wastewater.

Hazardous wastewater with a pH of less than 2 or more than 12.5 is hazardous under RCRA. However, some states consider corrosive hazardous wastewater with pH values of 2 to 4 and 10 to 12 hazardous and require it to be neutralized before release. Other states have more stringent restrictions on the concentrations of metals or other constituents allowable in wastewater. Most neutralization and oil skimming is handled in tanks permitted under the Clean Water Act and thus exempt from RCRA permitting. These wastes are reported as hazardous wastes managed in units exempt from RCRA permitting requirements. There have been no previous national surveys that have asked for this information on hazardous wastes managed in units exempt from RCRA permitting requirements. Consequently, there are no earlier benchmarks with which to compare these totals.

These hazardous waste quantities include only quantities that were managed in 1985. Some facilities were in the process of discontinuing hazardous waste management operations or undergoing closure of all or part of their TSDR capabilities. Others were going out of business at the site. Of the 2,971 facilities active in 1985, 324 or approximately 11 percent were in this category. These closing facilities accounted for 5.3 percent of hazardous waste quantity managed in units exempt from RCRA permitting requirements and 2.4 percent of the hazardous waste quantity managed in units regulated under RCRA. There were an additional 90 facilities that are not included as active because they are also closing but managed no hazardous waste quantities during 1985.

Of the 272 MMT managed in units regulated under RCRA, 232 MMT (85.3 percent) was treated, 100 MMT (36.8 percent) was stored, and 33 MMT (12.1 percent) was disposed. Because some hazardous wastes went through more than one technology (treated, then stored, and then disposed), these percentages do not sum to 100 percent. This is consistent with our understanding of the types of hazardous waste managed. Verification telephone calls revealed that, especially in the case of the very largest TSDRs, a large percentage of their hazardous waste quantity was hazardous wastewater that was usually treated and then discharged into a publicly owned treatment works (POTW) or into a waterway under a Clean Water Act, National Pollutant Discharge Elimination System (NPDES) permit. Typically, this hazardous wastewater is corrosive, with a pH of less than 2.0 prior to treatment, and therefore a waste regulated under RCRA. Based on follow-up telephone calls to the top 20 facilities, we estimate that a minimum of 80 percent of the 272 MMT managed in units regulated under RCRA is hazardous wastewater.

Of the 311 MMT managed in units exempt from RCRA permitting requirements, 99.3 percent is treated and 1.6 percent is recycled. These two categories do not appear to overlap except for a few facilities. For exempt technologies, hazardous wastes are either treated or recycled, but usually not both. Respondents reported that the influence of hazardous wastewater is important. Hazardous wastes treated in units exempt from RCRA permitting requirements are primarily hazardous wastewater, while hazardous wastes managed in exempt recycling units are largely solvents and similar organic-containing wastes. Facilities may be treating the same type of hazardous wastewater and conducting the same types of recycling operations in either permitted or exempt technologies depending on the differences in state hazardous waste regulations. No verification was done on the percentages that wastewater treatment and recycling represented of the total quantity of hazardous wastes managed in units exempt from RCRA permitting requirements.

Several factors influence the accuracy of the numbers that indicate the quantity of hazardous wastes managed in exempt units:

- In many states, quantities of hazardous wastes managed in exempt units do not have to be reported. Consequently, facilities do not expend as much effort accurately measuring these quantities as they do with wastes managed in units regulated under RCRA.

- Survey respondents noted that these quantities were usually estimates with a much lower level of precision than the data for wastes managed in units regulated under RCRA.

- If a waste were treated in both regulated and exempt units, the survey instructions directed respondents to report it only for regulated units. If a respondent failed to do this, the same waste quantity was counted as being managed in both regulated and exempt units. Thus, adding quantity managed in regulated units to quantity managed in exempt units would overestimate the total quantity of hazardous waste managed at the facility.

These national totals represent the results of a census of known TSDRs in 1985. There may be discrepancies between these data and the actual quantities managed due to the following factors:

- Through inappropriate data codes or similar errors, some TSDRs may have been excluded from the census universe. We believe this number to be very small. EPA is continuing to follow-up on facilities that are reported by various sources as missing from the data base. They are added if further investigation shows this to be warranted.

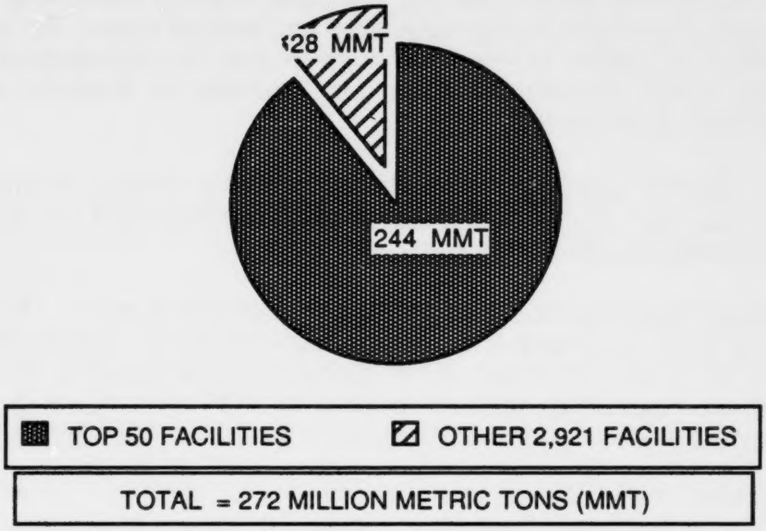
- Facilities may have reported quantities inaccurately. However, we believe these errors have been reduced them to a minimum.

- Facilities may have received their permits since January 1986. This survey and these results do not include any facilities permitted after that date. These TSDRs will be added to the population for the detailed TSDR survey.

We did not ask for information that would enable us to determine the actual quantities managed in commercial technologies. This information will be reported in the 1987 follow-up survey.

Figure 5-1 shows the distribution of hazardous waste managed by the 50 largest TSDRs in the United States. These facilities managed 244 MMT of hazardous waste (90 percent of the total hazardous waste managed in regulated units at TSDRs).

FIGURE 5-1 QUANTITY OF HAZARDOUS WASTE MANAGED DURING 1985, BY THE 50 LARGEST ACTIVE FACILITIES USING UNITS REGULATED UNDER RCRA



5.3 HAZARDOUS WASTE QUANTITIES BY EPA REGION

Figure 5-2 shows the distribution of hazardous waste quantities managed at TSDRs by EPA region. Those regions with concentrations of industries that traditionally generate hazardous wastes show the highest quantities. With the exception of Texas and Louisiana, those areas west of the Mississippi River managed low quantities of hazardous waste. Regions 7, 8, 9, and 10 account for only 3.2 percent of all waste managed in units regulated under RCRA and 17.4 percent of all waste managed in units exempt from RCRA permitting requirements.

This higher percentage of hazardous wastes managed in units exempt from RCRA permitting is primarily due to hazardous wastes in Region 9, which includes California. California regulates wastewater treatment technologies and waste oil recycling, requiring more quantities to be treated or recycled than do many other states. Most states do not regulate waste oil as hazardous. Wastes managed in many of these technologies are reported as quantities managed in units exempt from RCRA permitting requirements.

These results appear to support the view that the following factors may influence the geographical distribution of hazardous waste management activities:

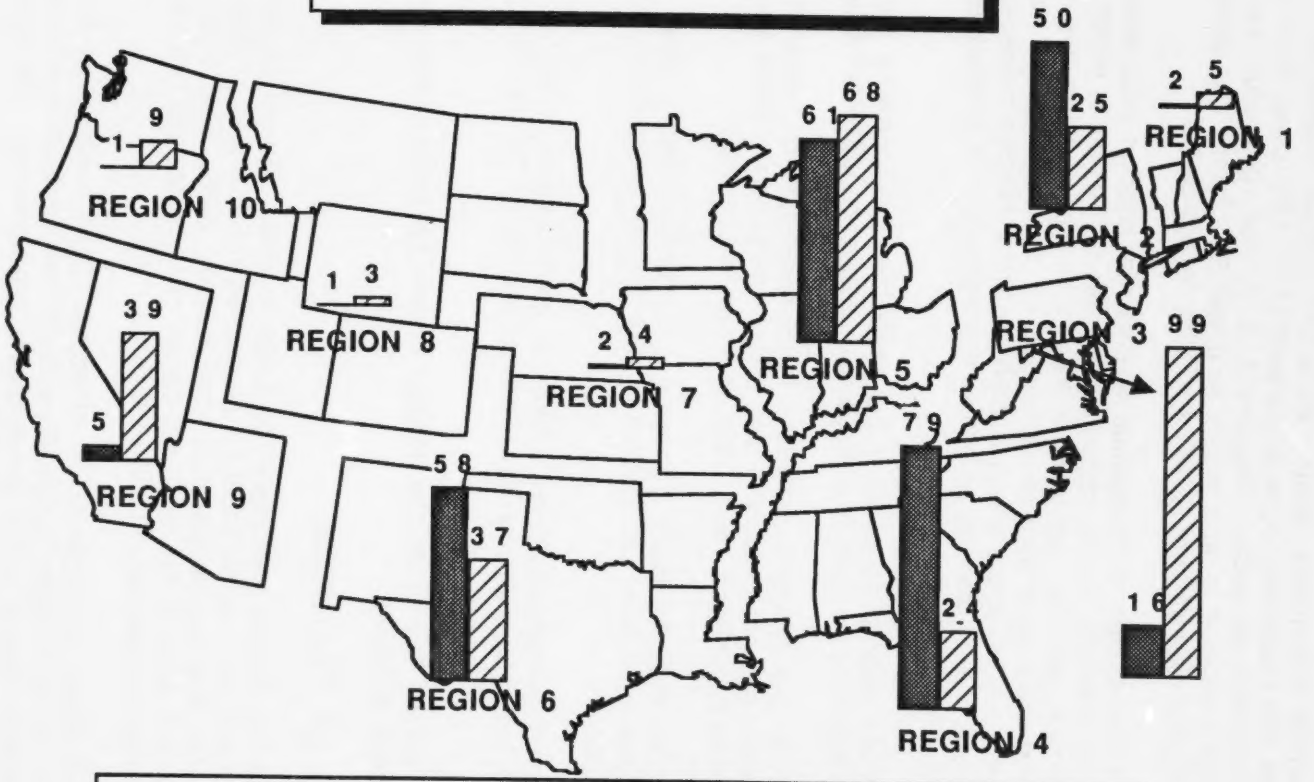
- Industries that typically generate large quantities of hazardous wastewater are not located in the western part of the United States because of less plentiful and, often, more expensive water.
- Industries that typically generate hazardous wastes that are hazardous have been concentrated in the eastern and central part of the country.
- Significant petrochemical and chemical manufacturing facilities are located in the New Jersey-New York area and the Texas-Louisiana areas.
- The western states of the United States typically have lower population densities.

5.4 NUMBER OF FACILITIES

The Screening Survey was mailed to 5,666 facilities. Based on the results of this census there are 2,971 active facilities (as defined in Section 5.1). This total does not include facilities that began operating after January 1986. The follow-up survey will also address the issue of facilities that began or have ceased hazardous waste operations, updating the number of facilities active in 1986.

Figure 5-3 shows the distribution of active TSDR facilities by EPA region. Region 5 has 761 facilities while Region 10, with 71, has the least number of facilities. Of the 259 facilities in Region 9, 223 are located within California. The other states in that region have very small numbers of TSDRs.

FIGURE 5-2 QUANTITY OF HAZARDOUS WASTE MANAGED BY ACTIVE FACILITIES DURING 1985, BY EPA REGION



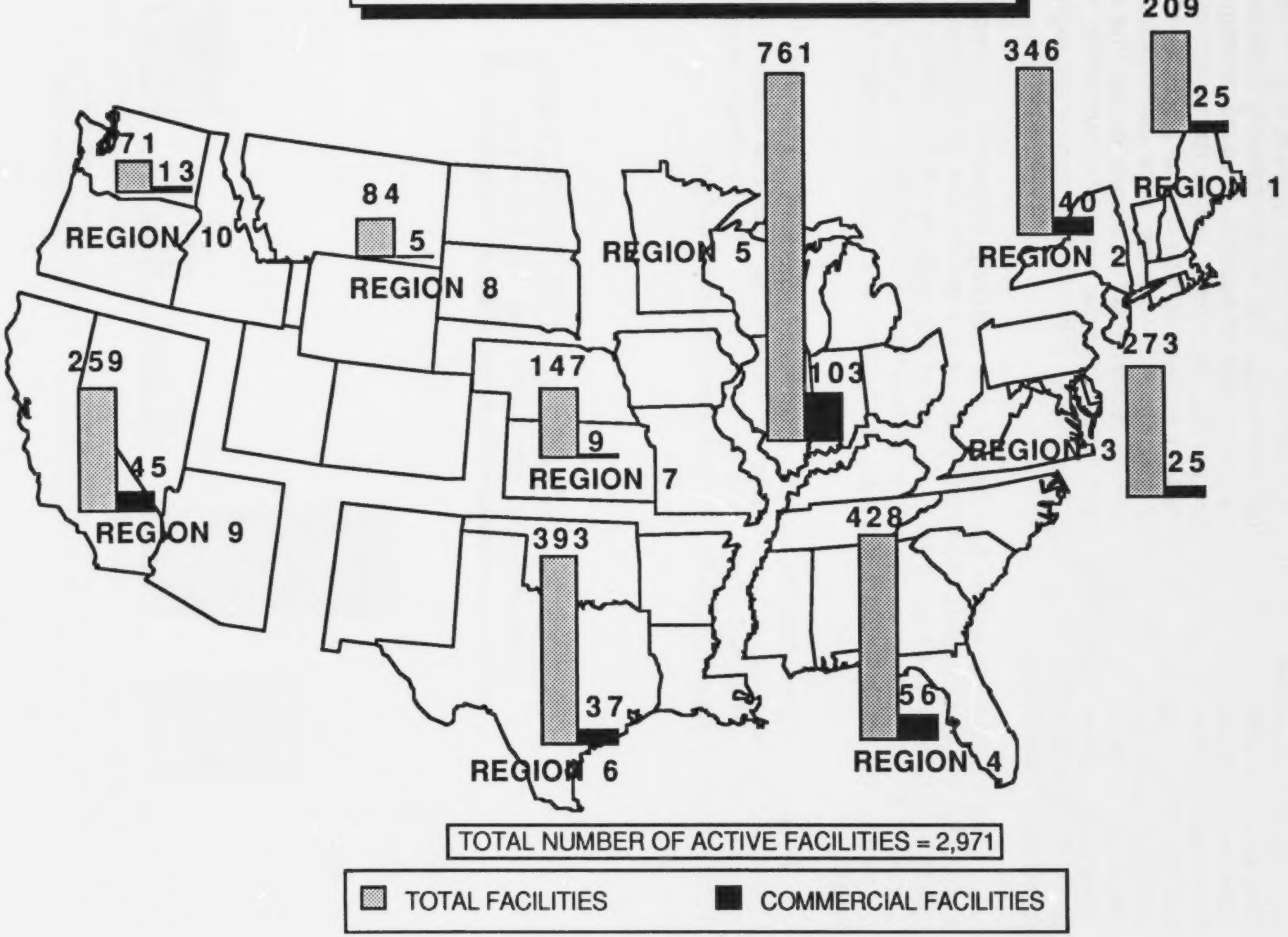
5 0
2 5
2
5
REGION 1
REGION 2
6 1
6 8
9
1
REGION 10
1
3
REGION 8
3 9
5
REGION 9
2
4
REGION 7
REGION 5
REGION 3
9 9
1 6
7 9
2 4
REGION 4
5 8
3 7
REGION 6

TOTAL WASTE MANAGED IN UNITS REGULATED UNDER RCRA = 272 MMT
TOTAL WASTE MANAGED IN UNITS EXEMPT FROM RCRA PERMITTING REQUIREMENTS = 311 MMT

▩ UNITS REGULATED UNDER RCRA ▨ UNITS EXEMPT FROM RCRA PERMITTING REQUIREMENTS

NOTE: Some waste may be managed in both regulated and exempt units. Consequently, the total amount of RCRA hazardous waste is less than the sum of waste managed in exempt and regulated units.

FIGURE 5-3 NUMBER OF ACTIVE FACILITIES DURING 1985, BY EPA REGION


REGION 1
209
25
REGION 2
346
40
REGION 3
273
25
REGION 4
428
56
REGION 5
761
103
REGION 6
393
37
REGION 7
147
9
REGION 8
84
5
REGION 9
259
45
REGION 10
71
13
TOTAL NUMBER OF ACTIVE FACILITIES = 2,971
▨ TOTAL FACILITIES
■ COMMERCIAL FACILITIES

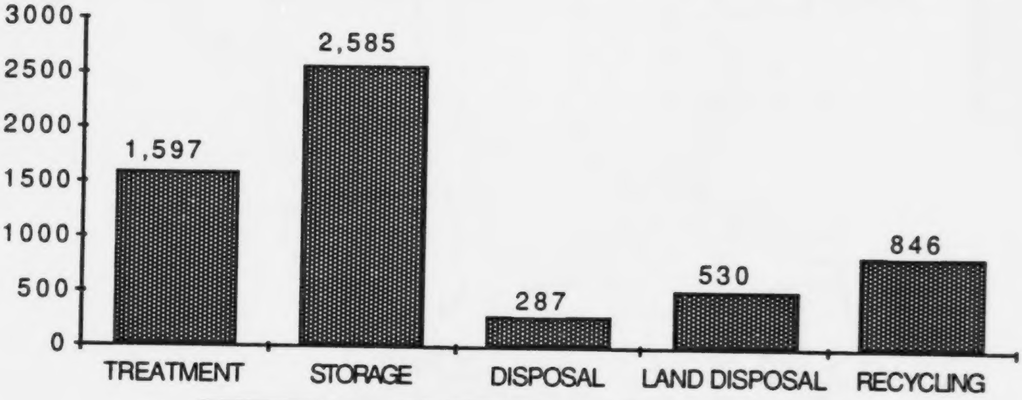
NOTE: Commercial facilities include those with at least one commercially available technology. See text for further details.

Those facilities shown as commercial have at least one technology that is commercially available. Of the 2,971 facilities, 528 have at least one "Treatment," "Storage," "Disposal," or "Recycling" technology that is commercially available. We have no information concerning the percentage of hazardous waste managed on a commercial basis, or whether commercial hazardous waste management is the facility's primary business. Some facilities manage wastes only as a special service to selected customers. We verified that the technologies were commercial in the telephone follow-up by narrowly defining "commercial" to be any facility that accepts hazardous wastes: from offsite; from firms not under the same ownership; for pay, profit, or as a special service to its customers. The follow-up survey will explore this question in more detail.

The number of active facilities is not perfectly correlated by region with hazardous waste quantities managed because the distribution of hazardous waste quantity is heavily skewed; a high percent of the quantity of hazardous waste is managed by a relatively small number of facilities. For example, Region 6 with 13 percent of the active facilities manages 21 percent of the total regulated hazardous waste.

Figure 5-4 summarizes the number of active facilities with "Treatment," "Storage," "Disposal," "Land disposal," and "Recycling" technology. Because facilities may have more than one technology, the sum is more than 2,971. Eighty-seven percent of the TSDRs have "Storage" capability, the most common classification.

FIGURE 5-4 NUMBER OF ACTIVE FACILITIES DURING 1985, BY TYPE OF TECHNOLOGY



TOTAL NUMBER OF ACTIVE FACILITIES = 2,971

Ten percent of the facilities reported that they had "Disposal" capabilities. We verified this information by cross-referencing EPA identification numbers with facilities listed in EPA's HWDMS. This method was used to verify that a facility had actually submitted a permit application for "Land disposal" and certified that it had met the financial responsibility and ground water monitoring requirements. This category includes only those technologies that are classified as "Disposal" technologies (i.e., "Landfills," "Land treatment," "Disposal surface impoundments," and "Underground injection wells"). The larger category of "Land disposal" capabilities (addressed under the Land Disposal Restriction Rules) includes "Treatment surface impoundments," "Storage surface impoundments," and "Disposal surface impoundments," "Waste piles," "Landfills," and "Land treatment" *but* excludes "Underground injection wells."

We report both "Disposal" and "Land disposal" separately for several reasons. "Disposal" technologies ("Underground injection wells," "Landfills," "Land treatment", and "Disposal surface impoundments") are important as the final management process for hazardous waste. "Land disposal" capabilities are critical for the proposed Land Disposal Restriction Rules and understanding permitting issues.

The Screening Survey specifically excluded Totally Enclosed Treatment Facilities (TETF) and Closed Loop Recovery facilities (CLR) because they are excluded from regulation under RCRA. A TETF is a treatment unit that is totally enclosed, directly connected to an industrial production process, and operated in a manner that prevents the release of any hazardous waste or any constituent thereof into the environment during treatment. To be considered a "closed-loop" recovery system, a recovery unit must meet all of the following criteria:

- Secondary materials must be returned to the original process.
- The production process to which these secondary materials are returned must be a *primary production process.*
- The secondary material must be returned as feedstock to the original production process and must be *recycled as part of the process.*

Table 5-2 shows the number of facilities with different combinations of technologies. It includes a number of facilities that currently are listed by OSW as being on a closure track for all or part of their TSDR technologies but that were active in 1985. Thirty-four percent (941 facilities) have only "Storage" technologies. Typically, this is drum or tank storage that allows the facility to accumulate enough hazardous waste for a cost-effective shipment to a treatment facility. In many cases, facilities told us that they have a storage permit but usually ship the hazardous waste offsite in less than 90 days. Many of the commercial facilities have collection points that are permitted storage facilities. Facilities with these storage/collection locations ship hazardous wastes to large centralized treatment or disposal facilities. Noncommercial firms also occasionally do this; for example, one division of a large corporation may treat the hazardous waste for the entire corporation.

TABLE 5-2. ACTIVE FACILITIES BY COMBINATIONS OF TECHNOLOGIES IN THE 1986 SCREENING SURVEY

TECHNOLOGY	NUMBER OF FACILITIES WITH UNITS REGULATED UNDER RCRA	NUMBER OF FACILITIES WITH BOTH RCRA REGULATED UNITS & UNITS EXEMPT FROM RCRA PERMITTING	TOTAL	% OF TOTAL
Treatment and storage only	995	26	1,021	34.36
Storage only	941	0	941	31.67
Treatment, storage, and recycling only	6	307	313	10.53
Storage and recycling only	0	288	288	9.69
Treatment, storage, and disposal only	5	106	111	3.73
Treatment only	0	102	102	3.43
T, S, D, and R	12	47	59	1.98
Disposal only	45	0	45	1.51
Storage and disposal only	0	41	41	1.38
Treatment and disposal only	19	1	20	0.67
Treatment and recycling only	1	18	19	0.63
Other combinations	0	11	11	0.37
TOTAL	2,024	947	2,971	100

Generally, the more technologies the facility has, the larger and more complex it is; however, complexity is not necessarily correlated with the quantity of hazardous waste managed. In many cases, facilities with many technologies are not necessarily managing large quantities of hazardous waste, just a wide variety. Research laboratories, universities, and colleges frequently follow this pattern.

5.5 MANAGEMENT TECHNOLOGIES BY FACILITY

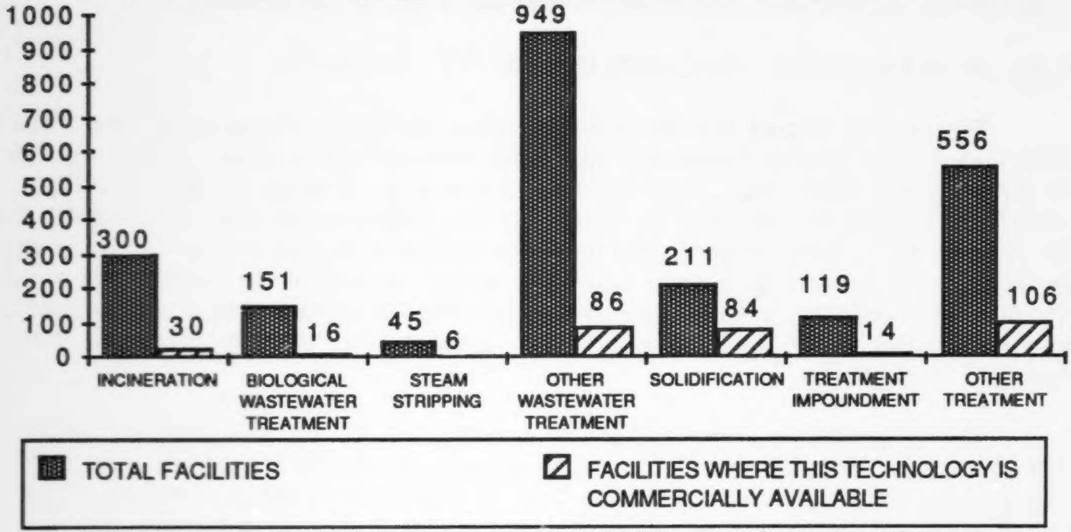
Figure 5-5 shows the number of active facilities with at least one treatment technology, and divides treatment into more detailed categories. "Other wastewater treatment," the most frequently utilized technology, is used in 949 facilities. The questionnaire did not ask facilities to identify the "Other wastewater treatment." Based on calls to the survey helpline and follow-up contacts by the survey technical staff to facilities, it appeared that a large number of these facilities were neutralizing or adjusting the pH of their hazardous wastewater. "Other wastewater treatment" technologies reported in the verification follow-up also included skimming, clarification, metal ion removal, and settling.

Some facilities categorized their neutralization as "Other treatment" rather than "Other wastewater treatment." During telephone verification follow-up, we specifically inquired about this misinterpretation and, in the data presented in this report, this misinterpretation is minimized. "Other treatment" includes open burning or detonation of explosives, physical/chemical treatment, mechanical filtering of chemicals (not hazardous wastewater), and those management operations that do not fall into any of the other categories.

Figure 5-6 provides data on active facilities that have "Storage impoundments," "Waste piles," or "Other storage." Almost 90 percent of all active facilities have some type of "Other storage." Through follow-up, we learned that almost all of these facilities had storage in either tanks or in containers, such as 55-gallon drums. The number of facilities with active surface impoundments used for storage has declined since the Screening Survey was mailed in February 1986. Facilities are phasing out this type of storage because of the November 8, 1985, restrictions on land disposal units and the forthcoming November 1988 deadline for retrofitting existing surface impoundments to prevent groundwater contamination.

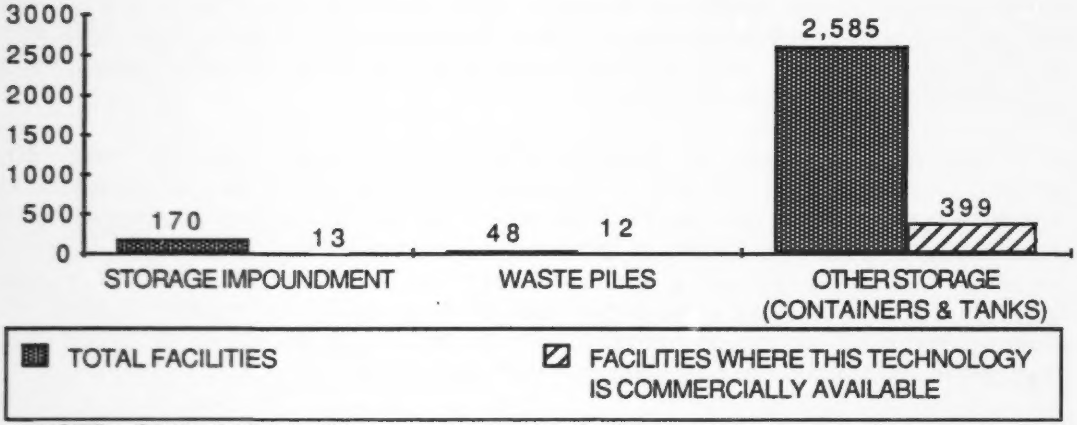
Figure 5-6 does not include any facilities that have (1) only 90-day accumulation and (2) no TSDR management technology. If all hazardous waste is stored or accumulated for less than 90 days, but the facility has a storage permit or interim status, then the facility is included as an active TSDR facility in these data. Facilities frequently file for a storage permit as a protective measure in case a hazardous waste must be kept longer than 90 days due to scheduling delays. Some facilities that have a storage permit or interim status but did not store longer than 90 days are in the process of changing to generator status.

FIGURE 5-5 NUMBER OF ACTIVE FACILITIES DURING 1985, WITH TREATMENT TECHNOLOGIES



NOTE: Of the 2,971 facilities surveyed, some facilities may have more than one treatment technology and some facilities may have no treatment technology.

FIGURE 5-6 NUMBER OF ACTIVE FACILITIES DURING 1985, WITH STORAGE TECHNOLOGIES



NOTE: Of the 2,971 facilities surveyed, some facilities may have more than one storage technology and some facilities may have no storage technology.

Figure 5-7 shows those facilities that have "Land disposal" technologies onsite. These facilities were active in 1985; however, because of the continuing concern about land disposal, many companies are closing their land disposal units or reducing their reliance on them. These totals already are lower than those provided from the 1981 survey, primarily due to the reaction of companies to HSWA of 1984, which place increasingly restrictive requirements on land disposal operations. Actual survey responses were compared with permit records in HWDMS to reflect the number of facilities that also submitted certification required by HWSA. Figure 5-7 reflects totals that have been adjusted for facilities that are formally closed or have approved closure plans. Survey respondents reported all "Land disposal" technologies that had not been formally closed regardless of whether they were actively adding hazardous wastes to the units (See Table 5-3). Based on our discussions with survey respondents, we anticipate that additional facilities plan to close.

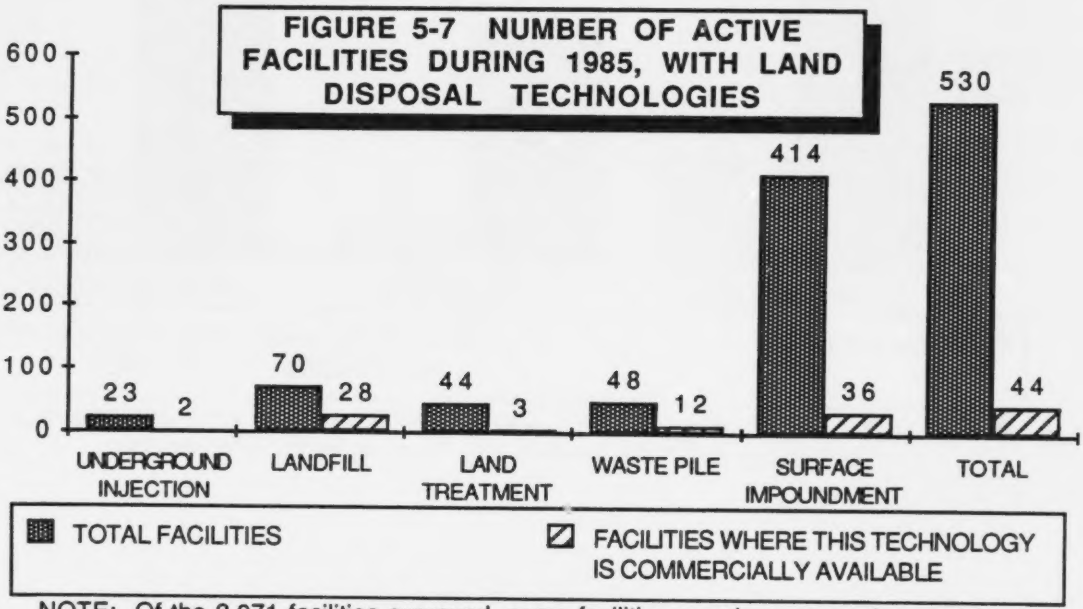
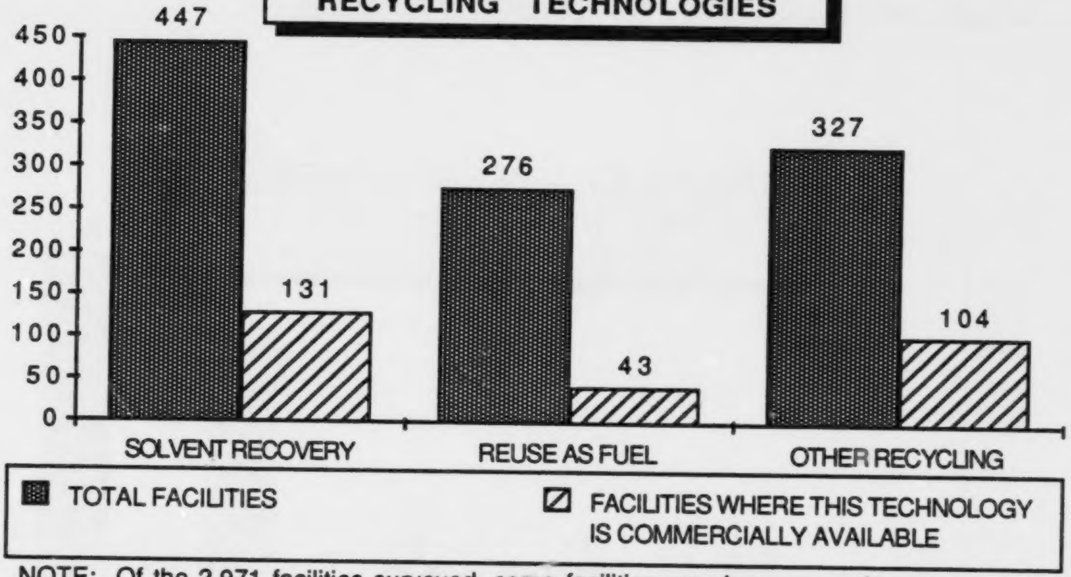


FIGURE 5-7 NUMBER OF ACTIVE FACILITIES DURING 1985, WITH LAND DISPOSAL TECHNOLOGIES

NOTE: Of the 2,971 facilities surveyed, some facilities may have more than one land disposal technology and some facilities may have no land disposal technology.

Figure 5-8 includes active facilities that have at least one "Recycling" technology onsite. We found that many respondents were confused as to what constitutes "Reuse as fuel." Some viewed it as "Incineration," "Other treatment," or "Other recycling." Therefore, the number of facilities that actually reuse hazardous waste as fuel is probably different from that shown. In addition, the regulations governing "Reuse as fuel" in 1985 were in a state of flux and this affected how respondents answered the question.

FIGURE 5-8 NUMBER OF ACTIVE FACILITIES DURING 1985, WITH RECYCLING TECHNOLOGIES



NOTE: Of the 2,971 facilities surveyed, some facilities may have more than one recycling technology and some facilities may have no recycling technology.

Three hundred twenty-seven facilities have "Other recycling" operations. Although the scope of this survey is limited to technologies that manage at least one federal hazardous waste and the total quantity of hazardous waste, (including federal and state hazardous waste), many facilities reported "Other recycling" technologies that managed only state hazardous wastes. We did not follow up on this because recycling was not a federally regulated process at the time of this survey. Thus, the "Other recycling" category includes a variety of operations such as:

- reuse of off-spec product,
- physical/chemical adjustments,

- recovery of rubber battery cases, and

- waste oil recovery.

For each of the hazardous waste management technologies included in the Screening Survey, Table 5-3 shows the number of active facilities that use a particular technology to manage a specific hazardous waste category. Hazardous waste categories used in the Screening Survey were selected to provide a preliminary indication of the hazardous wastes a facility could manage. These data are related to the categories of hazardous wastes being considered for Land Disposal Restriction Rules by EPA. The "Land disposal" management technology includes all surface impoundments ("Storage," "Treatment," and "Disposal"), "Waste piles," "Landfills," and "Land treatment" *but* excludes "Underground injection wells."

The way the hazardous waste category and technology question was posed does not provide information about which facilities actually manage any one hazardous waste category at this time. These data give the number of facilities that have the *capability* of managing a particular hazardous waste category but not whether the facility actually manages the hazardous waste.

Table 5-3 includes responses for all the categories of hazardous wastes and technologies asked on the Screening Survey. In addition, the first column indicates the number of facilities that offer a particular technology commercially.

5.6 COMMERCIAL STATUS OF MANAGEMENT TECHNOLOGIES

Facilities were asked to designate whether each technology was commercially available to the public. This was done on a technology-basis rather than a facility-basis. Commercial hazardous waste treatment does not have to be the primary activity at a facility for an individual technology or unit to be considered "commercially available." All facilities fall into one of three categories:

- All technologies are commercially available.

- No technologies are commercially available.

- Some technologies are commercially available and some are used for management of hazardous waste generated onsite.

Seldom is a facility completely commercial for all technologies, even one whose business is commercial hazardous waste incineration. Individual units may generate hazardous waste residues that are treated in other noncommercial units. In the Screening Survey, "commercially available" was defined as follows:

TABLE 5-3. NUMBER OF ACTIVE FACILITIES WITH TECHNOLOGIES AVAILABLE FOR MANAGING SELECTED HAZARDOUS WASTE TYPES

Management Technologies	Total Facilities with this Technology*	Total Commercially Available**	Acidic	Metals	Cyanides	Solvents	Other Halogenated Organics	Other Hazardous Wastes
TREATMENT OPERATIONS								
Liquids incineration	190	17	58	29	39	136	79	134
Solids incineration	110	13	27	35	25	45	39	91
Wastewater treatment								
Biological	151	16	66	40	25	64	45	114
Steam stripping	45	6	5	5	6	14	16	20
Other	949	86	696	574	247	82	58	298
Solidification	211	84	76	148	51	66	64	123
Treatment impoundment	259	24	153	125	39	42	31	118
Other treatment	556	106	229	209	95	94	66	321
STORAGE OPERATIONS								
Storage impoundment	414	28	132	216	43	64	58	210
Waste pile	112	19	13	75	4	12	12	54
Other storage	2,585	399	1,310	1451	791	1,982	1,302	1,749
DISPOSAL OPERATIONS								
Underground injection	79	11	47	26	19	22	20	56
Disposal impoundment	69	10	21	35	13	11	6	43
Landfill	126	36	35	94	37	37	36	90
Land treatment	82	6	9	32	2	10	6	77
LAND DISPOSAL***	746	85	280	427	101	139	118	410
RECYCLING OPERATIONS								
Solvent recovery	447	131	12	7	3	406	147	61
Reuse as fuel	276	43	12	14	5	178	36	165
Other recycling	327	104	78	119	7	88	58	148

*Total number of facilities = 2,971.

**Total number of facilities having at least one commercial technology = 527.

***Land disposal includes facilities having at least one of the following: treatment impoundment, storage impoundment, disposal impoundment, waste pile, landfill, and land treatment. Survey respondents reported all land disposal technologies that had not been formally closed regardless of whether they were actively adding hazardous wastes to the units. This has not been modified to reflect facilities listed in HWDMS as having units undergoing closure.

> "Any hazardous waste treatment, storage, disposal, or recycling operation or unit is considered 'commercially available' if it is generally offered to other parties NOT UNDER THE SAME OWNERSHIP as this facility. Commercially available operations or units are usually offered for sale or other renumeration. However, commercially available operations or units INCLUDE those used to recycle (reuse, reclaim, or recover) hazardous waste that has been purchased. Any operation or unit offered ONLY to other parties UNDER THE SAME OWNERSHIP as this facility is NOT considered commercially available. Commercial hazardous waste treatment, storage, disposal, or recycling does not have to be the *primary* activity at a facility for an operation or unit to be considered 'commercially available'."

Some respondents were confused by the term and thought we wanted to know whether a specific piece of equipment was available on the open market for purchase by any facility to use for its own hazardous waste. In follow-up phone calls, we verified whether or not a facility was actually making the technology commercially available and believe that the following results reflect what services are truly commercially available to any firm.

Table 5-4 shows the hazardous waste management technologies offered by active facilities for the six major hazardous waste types in which at least one of the technologies at each facility is commercially available. The most common technology offered commercially at these facilities is "Other storage" followed in order by "Solvent recovery," "Other wastewater treatment," "Other treatment," and "Other recycling."

These active facilities include those traditionally thought of as being commercial as well as those captive commercial which offer hazardous waste services to their selected customers at cost or as an inducement to buy other services. Those typically thought of as commercial may have some technologies that are not offered as part of their commercial package but are necessary for the operation of the facility. For example, an incinerator facility may have wastewater treatment for managing hazardous wastewater generated onsite but does not offer that technology to the general public. A landfill may have a hazardous wastewater treatment system to treat the contaminated water from the leachate collection system.

Some active facilities manage other firm's hazardous wastes on a limited commercial basis. Usually, these facilities do not accept hazardous waste from the general public, choosing to offer this incentive to attract customers. Positive commercially available responses were verified in telephone follow-ups revealing that a small number of firms engage in this practice.

Figure 5-9 summarizes the distribution of active facilities, by EPA Region, that offer at least one commercially available technology. The largest number of commercial facilities is in Region 5, which also had the largest hazardous waste quantity. However, the next two largest regions in terms of numbers of commercial facilities (Regions 4 and 9) are not the next two largest regions in terms of quantities of hazardous wastes managed (Regions 2 and 3).

TABLE 5-4. NUMBER OF ACTIVE FACILITIES PROVIDING HAZARDOUS WASTE MANAGEMENT

ACTIVE FACILITIES WITH AT LEAST ONE COMMERCIAL TECHNOLOGY

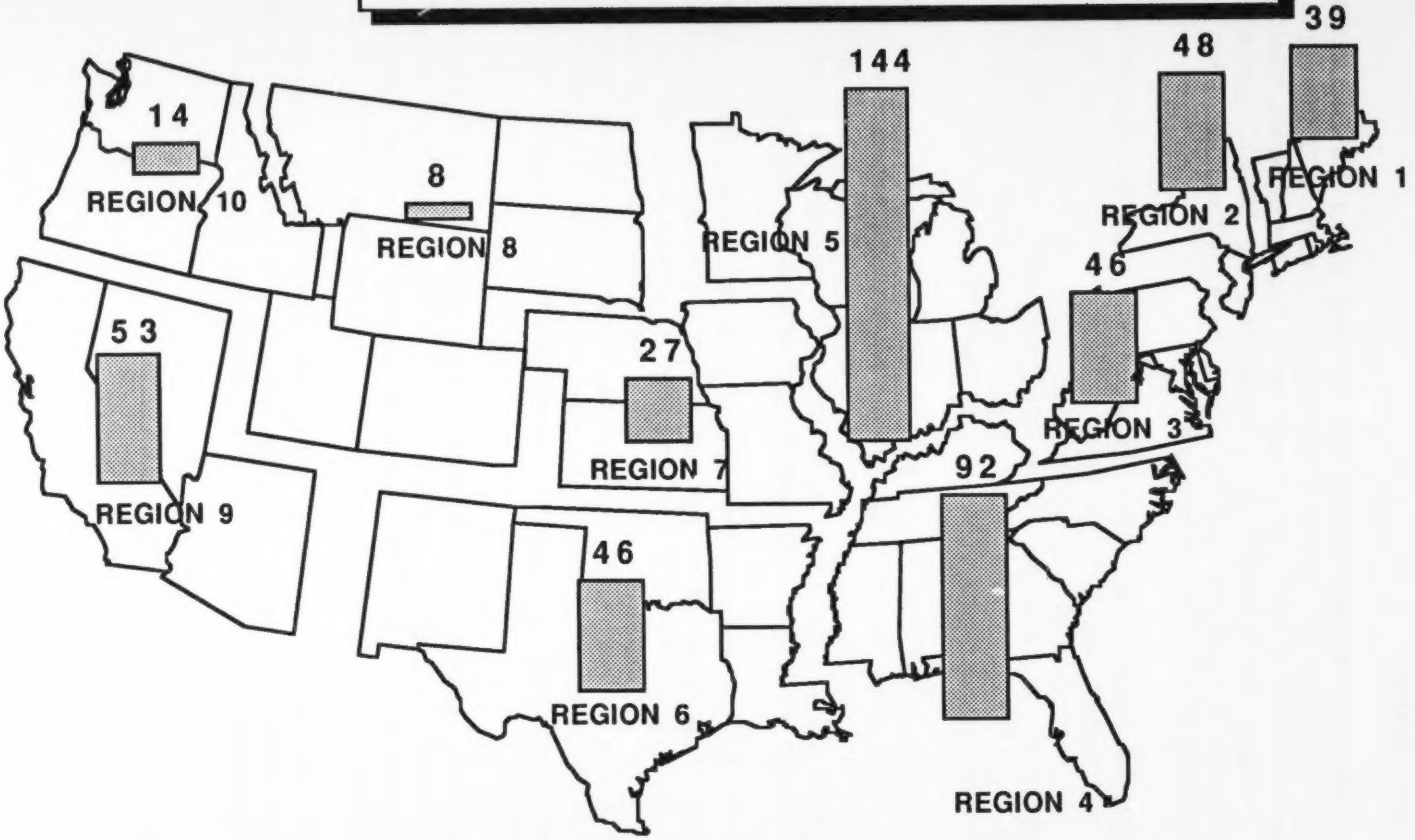
Management Technologies	Total Facilities*	Commercially Available**	Acidic	Metals	Cyanides	Solvents	Other Halogenated Organics	Other Hazardous Wastes
TREATMENT OPERATIONS								
Liquids incineration	25	16	13	12	12	21	19	21
Solids incineration	18	13	8	10	10	12	12	17
Wastewater treatment								
Biological	19	13	8	6	4	6	6	14
Steam stripping	6	4	1	2	0	3	0	4
Other	126	48	86	78	34	24	17	70
Solidification	97	66	45	70	35	44	48	78
Treatment impoundment	33	18	19	20	7	9	8	22
Other treatment	117	68	54	62	35	49	40	75
STORAGE OPERATIONS								
Storage impoundments	39	16	17	17	4	5	6	24
Waste pile	29	13	9	23	3	7	8	19
Other storage	459	247	202	223	133	369	244	279
DISPOSAL OPERATIONS								
Underground injection	11	10	9	10	8	9	7	10
Disposal impoundment	13	10	3	11	3	5	2	13
Landfill	39	31	17	35	23	21	23	33
Land treatment	6	0	0	3	0	0	0	6
LAND DISPOSAL***	105	62	46	77	32	36	59	74
RECYCLING OPERATIONS								
Solvent recovery	142	28	3	3	1	131	76	32
Reuse as fuel	62	31	0	9	0	50	17	40
Other recycling	113	49	26	39	1	48	36	56

*Total number of facilities = 2,971.

**Total number of facilities having at least one commercial technology = 527.

***Land disposal includes facilities having at least one of the following: treatment impoundment, storage impoundment, disposal impoundment, waste pile, landfill, and land treatment.

FIGURE 5-9 NUMBER OF ACTIVE FACILITIES WITH AT LEAST ONE COMMERCIALLY AVAILIABLE TECHNOLOGY DURING 1985, BY EPA REGION


39
48
144
14
8
REGION 1
REGION 2
REGION 10
REGION 8
REGION 5
46
53
27
REGION 3
92
REGION 7
REGION 9
46
REGION 6
REGION 4

TOTAL NUMBER OF ACTIVE FACILITIES = 2,971

5.7 HAZARDOUS WASTE QUANTITY AND FACILITIES BY SIC CODE

The Screening Survey did not ask for data about the SIC Codes for these facilities. We assigned SIC Codes to each facility according to the methods outlined below. Because there is such a large and varied number of codes represented by the surveyed facilities, we provide data only for the top 50 SIC Codes. Table 5-5 represents the top 50 codes by quantity. Table 5-6 provides information on the top 50 codes by numbers of facilities in that code.

We are interested in SIC Codes because they allow the impacts of new rules to be distributed across economic sectors. They are not without their limitations, however. Some industrial and agricultural areas are minutely classified. Other recently developed industries are forced into categories in which they do not really fit. SIC Codes are also aggregated when classifications have only a few firms, usually into the more general category of "NEC" (not elsewhere classified).

The distribution of SIC Codes used in this report is not found in any report or survey; they have been carefully derived from several data sources The HWDMS data base contains SIC Codes assigned to each facility by EPA identification number. It was used as a starting point, but contained many codes only at two or three digit levels. In addition, codes were missing altogether for some facilities.

For 77 facilities with suspect, missing, or incomplete SIC Codes, wherever possible, RTI obtained waste stream data from a previous survey done by EPA in 1981. This data gave information on the primary wastes that each facility produced. These data were inspected on an individual basis for wastes that would identify a particular industry, such as K084, "wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds." Waste stream data were then used to infer an industry classification for the facility that generated them.

Additionally, each facility's responses were inspected for identifying information in its facility, name, or location. For example, a facility named "City Wood Preservers" would be assigned to SIC 2491, wood preserving industries. Each facility was reviewed individually and a SIC assigned to it that best described its line of business.

Other information sources consulted were: *The Standard Industrial Classification Manual*, *Moody's Industrial Manual*, directories of manufacturing firms, *Census of Manufactures*, and *Industrial and Hazardous Waste Management Firms*.

TABLE 5-5. FIFTY FOUR-DIGIT SIC CODES MANAGING THE LARGEST WASTE QUANTITIES IN UNITS PERMITTED UNDER RCRA

SIC CODE	DESCRIPTION	NUMBER OF FACILITIES	TOTAL QUANTITY (MMT)	PERCENTAGE OF TOTAL QUANTITY
2822	Synthetic rubber	15	43.9461	16.18
2816	Inorganic pigments	18	31.4932	11.60
2865	Cyclic crudes & intermediates	24	30.8315	11.35
2869	Industrial organic chemicals, NEC	98	28.1197	10.35
2819	Industrial inorganic chemicals, NEC	119	18.6194	6.86
2821	Plastics, materials & resins	91	11.8227	4.35
4953	Refuse systems	173	7.1016	2.61
2879	Agricultural chemicals, NEC	39	6.8624	2.53
2812	Alkalies & chlorine	18	4.6728	1.72
2861	Gum & wood chemicals	3	4.1245	1.52
2999	Petroleum & coal products, NEC	4	2.8455	1.05
2833	Medicinals & botanicals	30	2.8212	1.04
3312	Blast furnaces & steel mills	56	2.8126	1.04
2911	Petroleum refining	110	2.6096	0.97
9711	National security	199	2.2263	0.82
3743	Railroad equipment	10	1.6354	0.60
2824	Organic fibers, noncellulosic	14	1.4553	0.54
3471	Plating & polishing	69	1.3636	0.50
2992	Lubricating oils & greases	19	1.0184	< 0.5
3317	Steel pipe & tubes	7	0.9975	< 0.5
2899	Chemical preparations, NEC	36	0.9246	<0.5
2851	Paints & allied products	44	0.8850	<0.5
2813	Industrial gases	7	0.8517	<0.5
3573	Electronic computing equipment	33	0.7625	<0.5
2874	Phosphatic fertilizers	5	0.6526	<0.5
3724	Aircraft engines & engine parts	16	0.6100	<0.5
9631	Regulation, & administration of utilities	8	0.5497	<0.5
3711	Motor vehicles & car bodies	18	0.4742	<0.5
7399	Business services, NEC	131	0.4689	<0.5
4511	Certified air transportation	3	0.4431	<0.5
3964	Needles, pins, & fasteners	5	0.4193	<0.5
3761	Guided missiles & space vehicles	7	0.4076	<0.5
3662	Radio & TV communication equipment	46	0.3760	<0.5
4911	Electric services	69	0.3327	<0.5
3356	Nonferrous rolling & drawing	5	0.3210	<0.5
3341	Secondary nonferrous metals	24	0.3189	<0.5
2834	Pharmaceutical preparations	38	0.2712	<0.5
2843	Surface active agents	5	0.2563	<0.5
3674	Semiconductors & related devices	32	0.2099	<0.5
3721	Aircraft	24	0.2076	<0.5
3479	Metal coating & allied services	20	0.1865	<0.5
3679	Electronic components, NEC	43	0.1626	<0.5
3483	Ammunition, except for small arms, NEC	8	0.1575	<0.5
3332	Primary lead	4	0.1533	<0.5
3449	Miscellaneous metal work	1	0.1519	<0.5
3691	Storage batteries	11	0.1448	<0.5
3452	Bolts, nuts, rivets, & washers	9	0.1410	<0.5
3643	Current-carrying wiring devices	8	0.1344	<0.5
2048	Prepared feeds, NEC	3	0.1308	<0.5
2892	Explosives	20	0.1258	<0.5

TABLE 5-6. FIFTY FOUR-DIGIT SIC CODES CONTAINING THE LARGEST NUMBER OF FACILITIES MANAGING UNITS PERMITTED UNDER RCRA

SIC CODE	DESCRIPTION	NUMBER OF FACILITIES	PERCENTAGE OF ALL FACILITIES
9711	National security	199	9.25
4953	Refuse systems	173	8.04
7399	Business services, NEC	131	6.09
2819	Industrial inorganic chemicals, NEC	119	5.53
2911	Petroleum refining	110	5.11
2869	Industrial organic chemicals, NEC	98	4.55
2821	Plastics, materials & resins	91	4.23
2491	Wood preserving	72	3.34
3471	Plating & polishing	69	3.20
4911	Electric services	69	3.20
3312	Blast furnaces & steel mills	56	2.60
3714	Motor vehicle parts & accessories	52	2.41
5161	Chemicals & allied products	49	2.27
3662	Radio & TV communication equipment	46	2.13
2851	Paints & allied products	44	2.04
3679	Electronic components, NEC	43	1.99
2879	Agricultural chemicals, NEC	39	1.81
2834	Pharmaceutical preparations	38	1.76
2899	Chemical preparations, NEC	36	1.67
8221	Colleges & universities, NEC	35	1.62
3573	Electronic computing equipment	33	1.53
3674	Semiconductors & related devices	32	1.48
3079	Miscellaneous plastic products	31	1.44
2833	Medicinals & botanicals	30	1.39
2865	Cyclic crudes & intermediates	24	1.11
3341	Secondary nonferrous metals	24	1.11
3721	Aircraft	24	1.11
3479	Metal coating & allied services	20	<1
2892	Explosives	20	<1
2992	Lubricating oils & greases	19	<1
5172	Petroleum products, NEC	19	<1
2816	Inorganic pigments	18	<1
2812	Alkalies & chlorine	18	<1
3711	Motor vehicles & car bodies	18	<1
3069	Fabricated rubber products	18	<1
3724	Aircraft engines & engine parts	16	<1
3321	Gray iron foundries	16	<1
2822	Synthetic rubber	15	<1
3519	Internal combustion engines, NEC	15	<1
2824	Organic fibers, noncellulosic	14	<1
3661	Telephone & telegraph apparatus	14	<1
2873	Nitrogenous fertilizers	13	<1
3229	Pressed & blown glass, NEC	13	<1
2891	Adhesives & sealants	12	<1
3691	Storage batteries	11	<1
3585	Refrigeration & heating equipment	11	<1
1311	Crude petroleum & natural gas	11	<1
3861	Photographic equipment & supplies	11	<1
3728	Aircraft equipment, NEC	11	<1
2844	Toilet preparations	11	<1
3743	Railroad equipment	10	<1
3531	Construction machinery	10	<1
3339	Primary nonferrous metals, NEC	10	<1
3494	Valves & pipe fittings	10	<1

5.8 FEDERAL FACILITIES

Table 5-7 shows the quantity of hazardous waste managed by federal agencies in units permitted under RCRA. Collectively, federal agencies account for 237 facilities or 8.0 percent of all active TSDRs in the nation. This table aggregates the individual federal facilities under their respective agencies by number of facilities and regulated quantity. Only the facilities that did not claim their data as Confidential Business Information (CBI) are tabulated. Figures 5-10 and 5-11 show the total quantities and total numbers of active federal facilities as a portion of the whole TSDR universe.

Figure 5-12 provides a summary of the quantity of hazardous waste managed by active federal facilities during 1985. Over 75 percent of all hazardous waste at federal facilities was managed in units exempt from RCRA permitting requirements. Some federal facilities may not have reported hazardous waste that they did not consider under EPA's jurisdiction, especially wastes considered to be hazardous by individual states or other federal agencies.

Figure 5-13 shows the quantities of hazardous waste managed by active federal facilities by type of technology. Federal facilities, especially military bases, may ship wastes regulated under RCRA to offsite commercial TSDRs. Hazardous wastes that usually are not accepted at commercial TSDRs, and consequently have to be managed onsite, include strongly reactive or explosive wastes, such as used or spent ordnance. Other hazardous wastes that federal agencies manage onsite are those that must be disposed of by federal facilities due to national security procedures or safety precautions, or substances private firms cannot accept under their permit.

The distribution of the hazardous waste quantities managed by active federal facilities according to EPA region is shown in Figure 5-14. Figure 5-15 shows the distribution of the number of active facilities by EPA region. This map reflects the location of military bases and DOE sites.

The number of active federal facilities with "Treatment," "Storage," "Land disposal," and "Recycling" technologies are depicted in Figure 5-16. Of the 237 federal facilities, almost 95 percent have some type of storage. Federal agencies use private commercial firms to handle some hazardous waste categories, such as "Solvents." Some military bases also are phasing out large PCB transformers, which they must store until management capacity becomes available.

The number of federal facilities that have particular "Treatment" technologies is shown in Figure 5-17. The "Treatment" technology most frequently used (77 facilities) at federal facilities is "Other treatment," the category used for open burning of explosives and detonation of ordnance. The next most frequent "Treatment" technology is "Other wastewater treatment," (50 facilities). "Incineration" is the third most frequent technology (43 facilities) and may be used to dispose unstable, out-of-date ordnance.

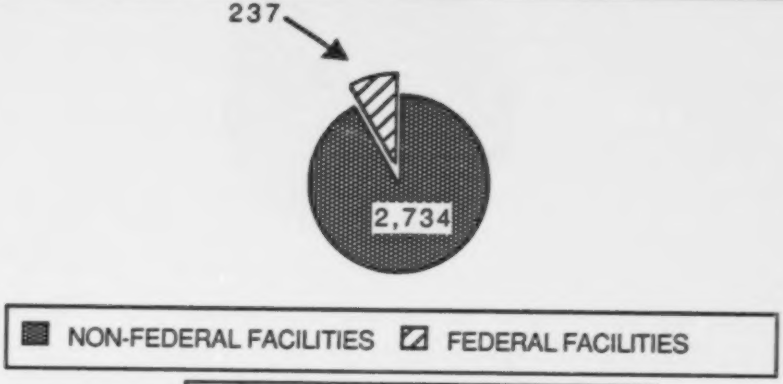
Figure 5-18 provides data on "Storage" technologies. Figure 5-19 provides data on "Land disposal" technologies. These totals do not reflect adjustments for facilities undergoing closure in 1987; the totals are for 1985 data.

TABLE 5-7. QUANTITY OF HAZARDOUS WASTE MANAGED BY ACTIVE FEDERAL FACILITIES IN UNITS PERMITTED UNDER RCRA

AGENCY NAME	NUMBER OF FACILITIES	REGULATED QUANTITY (MMT)
U.S Navy	42	1.181955
U.S. Department of Energy	23	0.595965
CBI Federal Facilities	2	0.264676
U.S Marine Corps	8	0.212069
U.S. Army	70	0.173225
U.S. Air Force	66	0.063235
NASA	5	0.013022
*Stoller Chemical Co. Inc./MIIDIV	1	0.005443
Tennessee Valley Authority	3	0.005316
*NI Ind. Inc. Riverbank Plant	1	0.003148
U.S. Environmental Protection Agency	5	0.001353
U.S. Department of Defense	6	0.000514
National Institute of Health	2	0.000107
*Olin Corp.	1	0.000081
U.S Bureau of Reclamation	1	0.000002
National Institute of Environmental Health Science	1	0.000001
Total	237	3.092112

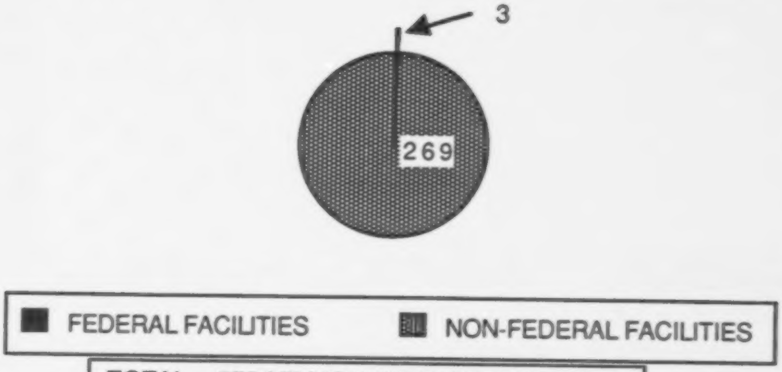
* Government contractor

FIGURE 5-10 NUMBER OF ACTIVE FEDERAL FACILITIES AS A PORTION OF THE TOTAL NUMBER OF FACILITIES DURING 1985



TOTAL NUMBER OF FACILITIES = 2,971

FIGURE 5-11 QUANTITY OF WASTE MANAGED IN ACTIVE FEDERAL FACILITIES VS. QUANTITY OF WASTE MANAGED IN NON-FEDERAL FACILITIES DURING 1985



TOTAL = 272 MILLION METRIC TONS (MMT)

FIGURE 5-12 QUANTITY OF HAZARDOUS WASTE MANAGED BY ACTIVE FEDERAL FACILITIES DURING 1985

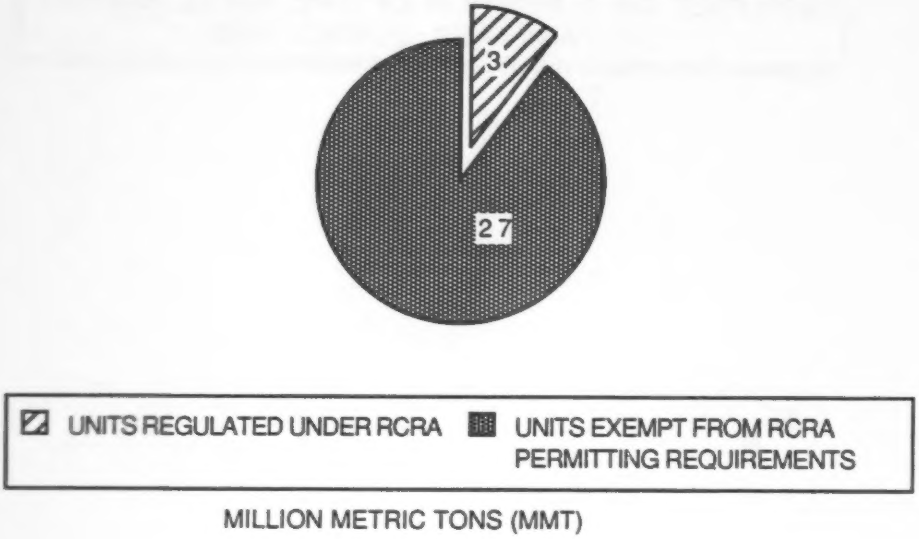


FIGURE 5-13 QUANTITY OF HAZARDOUS WASTE MANAGED BY ACTIVE FEDERAL FACILITIES DURING 1985, BY TYPE OF TECHNOLOGY

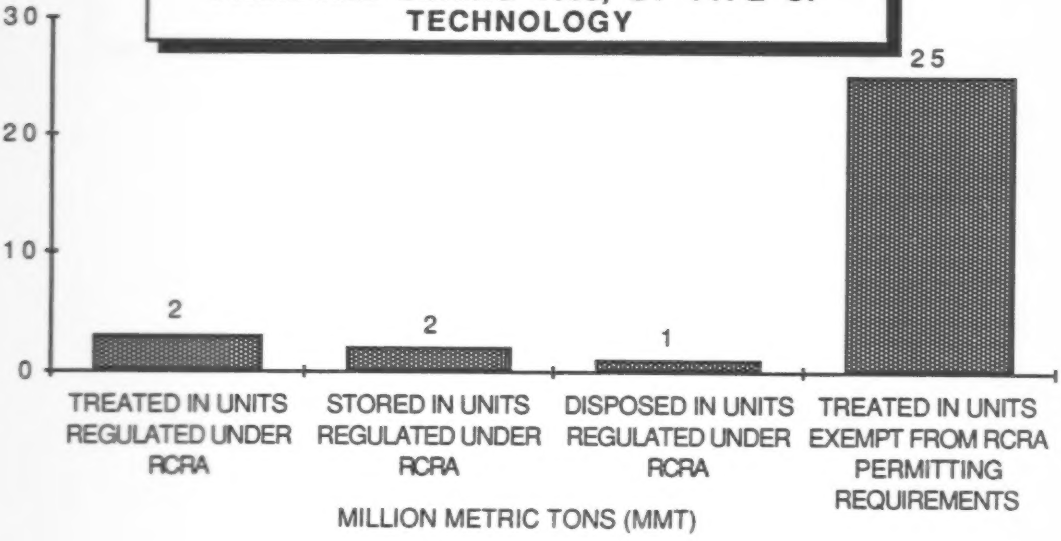


FIGURE 5-14 QUANTITY OF HAZARDOUS WASTE MANAGED BY ACTIVE FEDERAL FACILITIES DURING 1985, BY EPA REGION

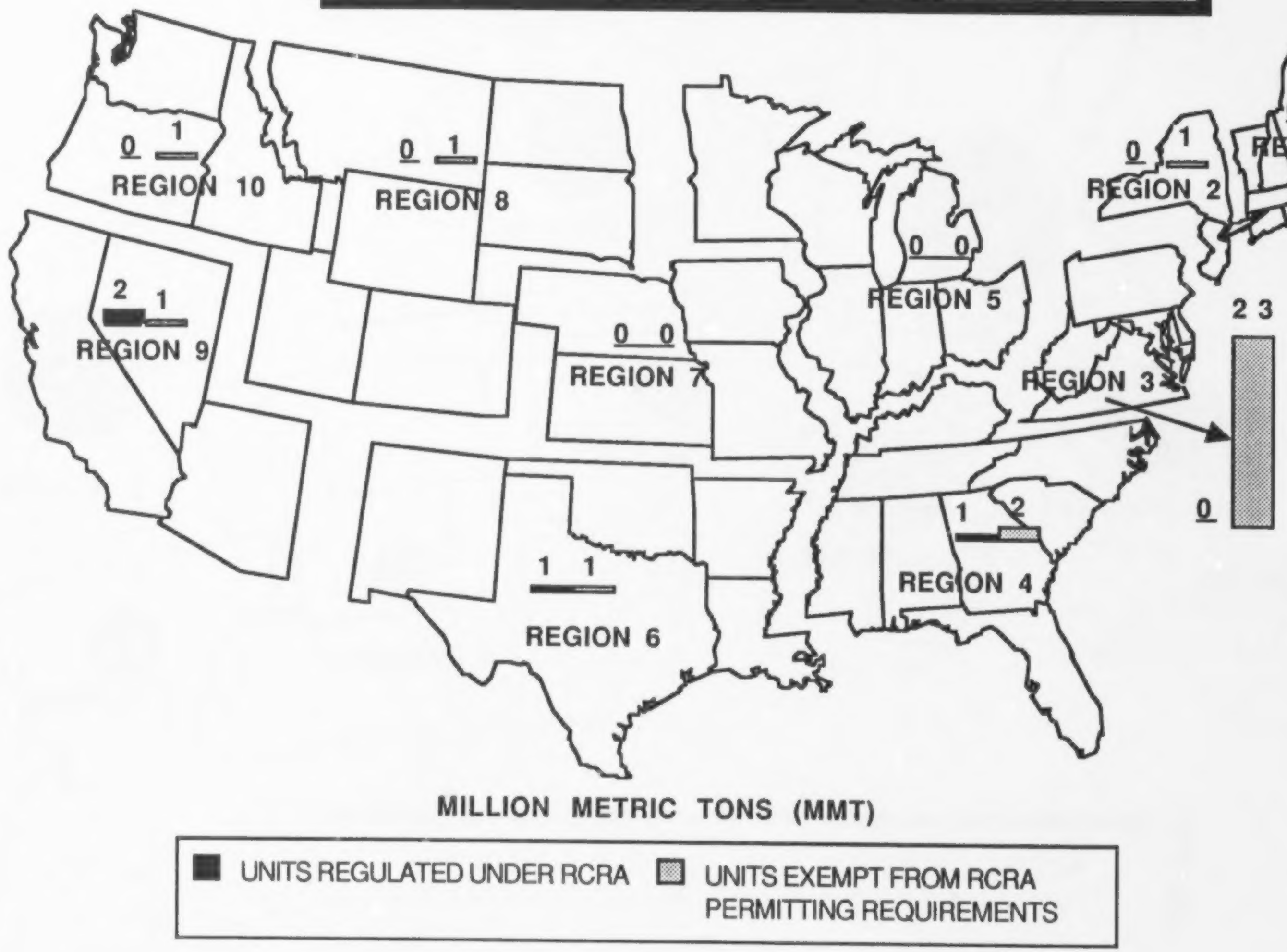
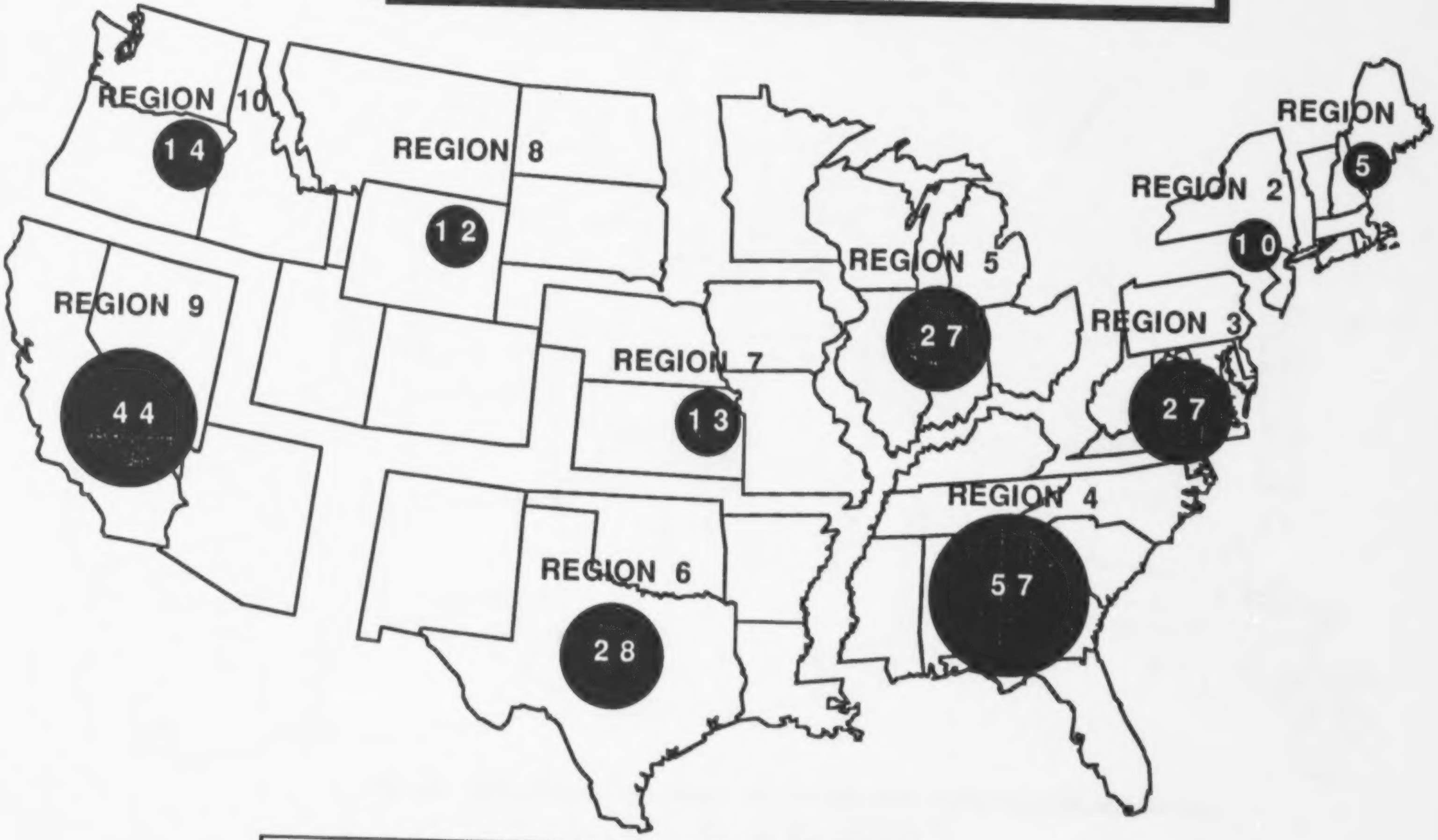
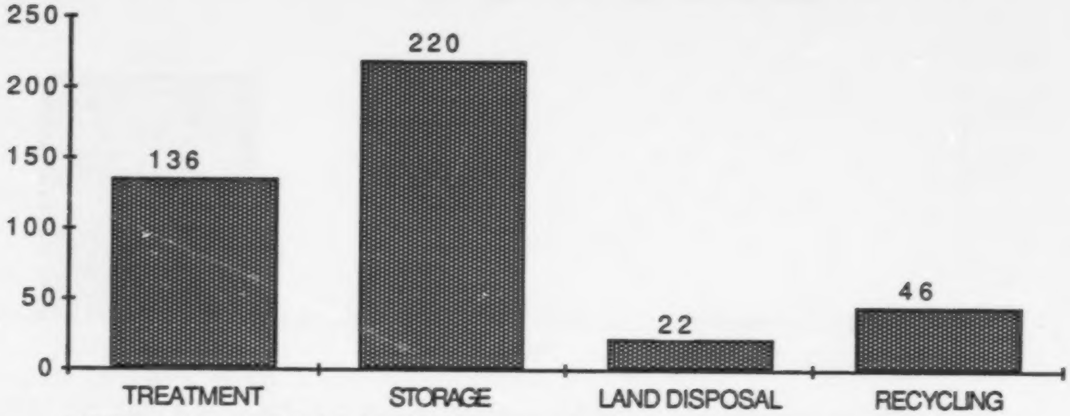

REGION 10
0 1
REGION 8
0 1
REGION 9
2 1
REGION 7
0 0
REGION 6
1 1
REGION 5
0 0
REGION 4
1 2
REGION 3
0
2 3
REGION 2
0 1
REGION 1
0 0
MILLION METRIC TONS (MMT)
■ UNITS REGULATED UNDER RCRA
▨ UNITS EXEMPT FROM RCRA PERMITTING REQUIREMENTS

FIGURE 5-15 NUMBER OF ACTIVE FEDERAL FACILITIES DURING 1985, BY EPA REGION


REGION 10
14
REGION 8
12
REGION 9
44
REGION 7
13
REGION 6
28
REGION 5
27
REGION 4
57
REGION 3
27
REGION 2
10
REGION
5

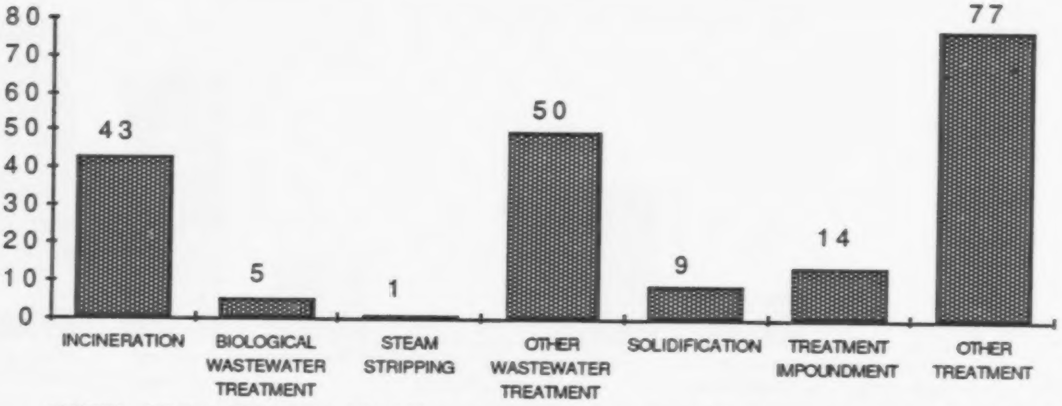
TOTAL NUMBER OF ACTIVE FEDERAL FACILITIES = 237

FIGURE 5-16 NUMBER OF ACTIVE FEDERAL FACILITIES DURING 1985, BY TYPE OF TECHNOLOGY



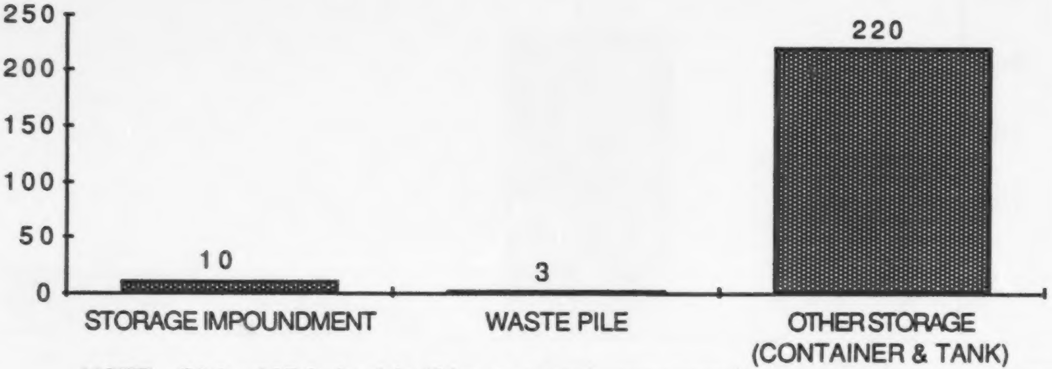
NOTE: Of the 237 federal facilities surveyed, some may have more than one type of treatment, storage, land disposal, or recycling technology, while others may have none.

FIGURE 5-17 NUMBER OF ACTIVE FEDERAL FACILITIES DURING 1985, WITH TREATMENT TECHNOLOGIES



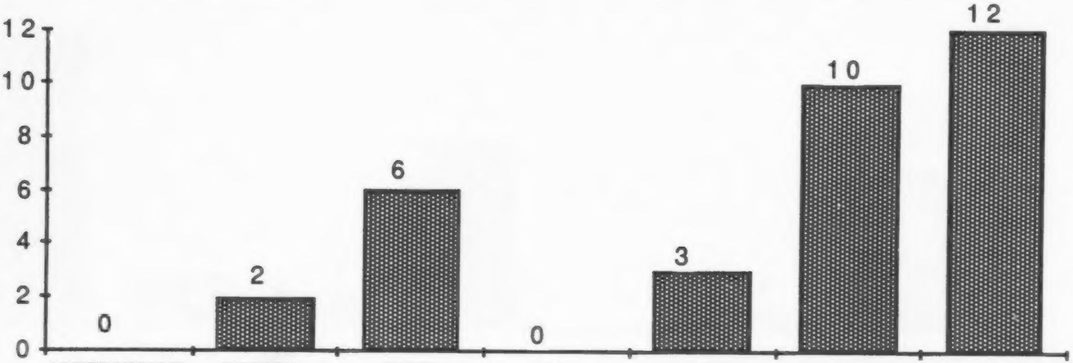
NOTE: Of the 237 federal facilities surveyed, some may have more than one treatment technology, while others may have none.

FIGURE 5-18 NUMBER OF ACTIVE FEDERAL FACILITIES DURING 1985, WITH STORAGE TECHNOLOGIES



NOTE: Of the 237 federal facilities surveyed, some may have more than one storage technology, while others may have none.

FIGURE 5-19 NUMBER OF ACTIVE FEDERAL FACILITIES DURING 1985, WITH LAND DISPOSAL TECHNOLOGIES



NOTE: Some of the 237 federal facilities may have more than one land disposal technology, while others may have none. Some facilities may have closed or be in the process of closing since the survey was completed.

5.9 TELEPHONE VERIFICATION

From calls to the Survey Helpline and written responses, we were aware that many changes in facility capabilities were being planned. A selected group of land disposal facilities was contacted in October 1986 to verify their types of operations. This follow-up revealed that numerous changes had occurred in response to the land disposal restrictions and regulations on existing surface impoundments. Consequently, additional follow-ups were made as necessary. We have also verified commercial availability, quantity of hazardous waste managed by the largest facilities, and contradictory responses. Based on these verifications, changes were made in the data base.

CHAPTER 6

CONCLUSIONS

6.1 GENERAL CONCLUSIONS

The 1986 National Screening Survey results, though general in scope, provide some insights into the universe of TSDRs. There are far fewer active TSDRs than there were in earlier years. Many of the facilities filed protectively to cover hazardous waste operations anticipated for the future. As additional paperwork requirements and regulations were put into effect, many of these facilities chose not to become TSDRs and (1) remained only generators, (2) ceased hazardous waste operations entirely, or (3) went out of business.

The hazardous waste management universe is dominated by very large onsite management facilities; the top 50 facilities manage 90 percent of the hazardous waste quantities. Based on our understanding of the industries generating hazardous waste and telephone verification, we consider the dominant hazardous waste category to be "Hazardous wastewater with low pH."

The quantities of hazardous wastes that are managed in units regulated under RCRA appears to have changed little, growing only slightly. Therefore, commercial facilities may be managing a larger percentage of the hazardous waste quantities than in earlier years. Responses to telephone follow-ups of the largest TSDRs indicated that approximately 80 percent of the hazardous wastes regulated under RCRA are hazardous wastewater. This large quantity of wastewater is essentially nonhazardous under RCRA by the time it is discharged by the facilities. This accounts for the large quantities of hazardous wastes that are treated compared to the amounts that are disposed (85.3 percent treated versus 12.1 percent disposed).

The quantities of hazardous wastes managed in units exempt from RCRA permitting requirements are greater than the quantities of wastes managed in units permitted under RCRA, largely due to the amount of hazardous wastewater treated in tanks and discharged under NPDES permits (exempt from RCRA permitting requirements). The large quantity of wastes managed in units exempt from RCRA permitting will be addressed in the 1987 TSDR Survey to a greater degree; these hazardous wastes compete for resources with wastes managed in units permitted under RCRA and need to be included in the hazardous waste universe.

6.2 QUESTIONNAIRE FORMAT CHANGES

Several EPA offices required current data on specific aspects of hazardous waste management sooner than the results of the detailed survey would be available. The Screening Survey data provide current information on all TSDRs; but they are, by design, limited in scope and general in the questions asked. As with any project of this type, we learned many things in conducting this survey that would have improved the quality of data of this survey and that of future efforts. Simple wording changes, in some cases, could have made responses more useful to these offices without adding to the respondent's burden.

Based on the results of the Screening Survey, we would change the method of wording some questions and terms. The addition of the wording in the definitions of "actively accepting wastes" would have made the data more accurate for use in comparison to HWDMS. Facilities using land disposal methods (i.e., surface impoundments, waste piles, landfills, underground injection wells, and land treatment) must certify to the EPA that they are in compliance with the groundwater monitoring and financial responsibility requirements of RCRA. This applies only to facilities that are "actively accepting wastes." The Screening Survey data base contains many surface impoundments that are not accepting hazardous wastes, but are not formally certified closed. This aspect will be specifically addressed in the 1987 TSDR Survey.

The regulated hazardous waste question (Question 3) contained the wording "Federal RCRA 90-day rule," which caused respondents much confusion because they did not know whether that meant less than 90 days or more than 90 days. Also, the heading for that question said "... in units regulated under RCRA"; this caused some facilities to omit their exempt units used for managing hazardous wastes. The intent of the Question 3 was to find out how much hazardous waste in RCRA-permitted storage was actually moved out in 90 days or less and might eventually be managed in units exempt from RCRA permitting. Facilities, however, said that if they moved it out in 90 days or less, they were exempt from permitting requirements and did not want to report the wastes at all. The 1987 TSDR Survey will split these two types of storage into "Accumulation" under the 90-day rule and "Storage."

Another wording problem was in the matrix question (Question 6); one of the columns was titled "Are onsite units of this type commercially available?" Some facilities misinterpreted that to mean "Could you buy an incinerator like ours?" and answered yes. The facilities in the commercial hazardous waste business seemed to understand the wording well, but noncommercial facilities did not. This confusion resulted in one of the main verification efforts, but the present responses are felt to be accurate.

In the same question, one of the hazardous waste categories was titled "Acidic corrosives (pH < 2)". This is the largest corrosive hazardous waste category, but there are numerous facilities that deal in caustics with pH > 12. Because the question was worded acidic, these caustic corrosives had to be placed in "Other hazardous wastes" along with oils and contaminated soils.

"Solvents" and "Other halogenated organics" are two other hazardous waste categories that were confused. Some common solvents are halogenated organics as well. Most pesticides are halogenated organics but not all of them. Some organic pesticides ended up in the column headed "Other hazardous wastes" while some solvents were placed in "Other halogenated organics." It would have been clearer if the hazardous waste categories were "Solvents of all types," and "Halogenated organics (except solvents) and pesticides." The detailed survey will ask for specific RCRA codes rather than categories.

The matrix question also had a technical wording problem caused by the need for a response in every column and every row. The respondents were asked to circle the option if they *did not* manage a specific hazardous waste category (row a) or if they *did not have* a technology (column 9). The result was respondent confusion in many cases. Such questions are more effective in the last row and column of a matrix and if they require action for positive responses instead of negative ones. In addition, the regulations governing "Reuse as fuel" in 1985 were in a state of flux and this affected how respondents answered the question.

In addition, facilities reported all RCRA-permitted technologies whether or not they were actually used. A facility that had filed protectively to have a hazardous waste incinerator but was actually using it to only burn paper and nonregulated trash could have the same technology responses as one with an incinerator used to manage hazardous waste.

California has its own hazardous waste codes, which do not completely correspond to RCRA codes; facilities repeatedly stated they would report them as wastes regulated under RCRA to be safe when they were unsure of the exact federal listing. The 1987 TSDR Survey will allow for state waste codes.

The quantity of hazardous wastes managed commercially is also unknown. Because few facilities accept wastes commercially for all technologies, the actual quantity treated commercially is not separated from the total quantity treated. These problems are addressed in the 1987 TSDR Survey on a technology-by-technology basis.

6.3 FUTURE DATA COLLECTION ACTIVITIES

The 1986 National Screening Survey is serving as the basis for several additional data collection efforts being conducted by EPA's OSW. Using the data collected in the Screening Survey, a detailed survey was prepared and mailed to over 2,300 TSDRs in August 1987. This survey consisted of the following individual booklets:

Instructions
A General Facility Information (64 questions)
B Incineration (51 questions)
C Reuse as Fuel (51 questions)
D Fuel Blending (33 questions)

E Solidification/Stabilization (53 questions)
F Solvent Recovery for Reuse (56 questions)
G Metals Recovery for Reuse (56 questions)
H Wastewater Treatment (47 questions)
I Other Processes (Treatment or Recovery) (59 questions)
J Waste Piles (58 questions)
K Surface Impoundments (85 questions)
L Landfills (48 questions)
M Landfills (48 questions)
N Underground Injection Wells (33 questions)
O Tank Systems (18 questions plus 21 questions for each tank)

This is a very detailed set of over 700 questions. The level of detail in this survey is due to the complexity of the decisions the Agency must make to implement the 1984 amendments. No facility fills out all the questionnaires. Rather the facility fills out only the booklets for the technologies that it has onsite and that are operational or planned to be operational by 1992.

EPA currently is facing many critical issues, among which are the land disposal restrictions, regulation of hazardous waste tanks, and Superfund requirements that the states determine their hazardous waste management capabilities. The Agency does not currently have the detailed data needed to make these complicated decisions. The 1987 TSDR Survey is part of EPA's effort to assemble a detailed data base for developing and evaluating hazardous waste regulations. This TSDR Survey focuses on gathering the following data:

- unit- and technology-specific operating parameters;
- information to provide a basis for regulatory development, including regulatory impact analyses for regulations required by HSWA of 1984;
- waste management capacity and hazardous waste quantities for the land disposal capacity decisions;
- tank system information for possible tank requirement revisions; and
- individual state hazardous waste management capacities.

A companion survey, the 1987 National Survey of Hazardous Waste Generators was mailed to a sample of generators in late 1987. Approximately 10,300 generators of hazardous waste received this questionnaire, which consists of the following booklets:

GA General Facility Information (154 questions)
GB Hazardous Waste Characterization (47 questions)
GC Fuel Blending (30 questions)
GD Reuse as Fuel (49 questions)
GE Wastewater Treatment (39 questions)

GF	Metals Recovery for Reuse (48 questions)
GG	Solvent Recovery for Reuse
GH	Other Recovery Processes (48 questions)
GI	Tank Systems (15 questions plus Tank Description Forms for each tank)

Data from these two surveys are expected to be available in 1989.

Appendix A
Pretest Questionnaire

OMB # ____________

Expires ____________

1986 National Screening Survey of Hazardous Waste Management Facilities

Introduction

The Office of Solid Waste (OSW) of the U.S. Environmental Protection Agency (EPA) is conducting a survey of U.S. hazardous waste management facilities. EPA has retained the Research Triangle Institute (RTI) as its survey contractor. Section 3007 of the Resource Conservation and Recovery Act (RCRA) requires your participation in this survey. Please complete and return the enclosed questionnaire within 30 days of receiving this package.

This survey is being conducted to gather information on the nation's capacity to manage—treat, store, dispose, and recycle—hazardous waste. This information will be used to assess the availability of alternatives to land disposal for the waste types scheduled for upcoming land disposal restrictions under the Hazardous and Solid Waste Amendments of 1984 (HSWA). The survey results will also support analyses of future regulatory actions.

EPA is conducting this survey in two parts—a screening survey of all hazardous waste facilities (both onsite and commercial) and a detailed survey of a sample of these facilities. This package contains the first part, the screening survey questionnaire.

We have identified the facility addressed in the accompanying cover letter as a hazardous waste management facility for purposes of this survey. We would therefore like this facility to provide the information requested in the brief questionnaire on the following pages.

What Is This Screening Survey Questionnaire?

This screening survey questionnaire asks for aggregate information that will be used to identify and characterize hazardous waste management facilities and to determine the size and composition of the sample for the detailed survey. Your timely and accurate responses to this questionnaire will help us reduce the number of facilities required to respond to the detailed questionnaire.

Who Should Complete the Questionnaire?

This questionnaire should be completed by the person who is most knowledgable of the hazardous waste management operations at this facility. All facilities receiving this questionnaire should complete and return it. Even if operations have temporarily or permanently ceased or if no hazardous waste is managed at this facility, we need your response indicating that this is the case in order to update our records and to get a clearer picture of hazardous waste management in the United States.

How Do I Complete the Questionnaire?

The enclosed screening questionnaire contains seven questions. The accompanying instructions contain all the information, including definitions of key terms, that you may need to answer the questions. When you have completed the questionnaire and signed and dated the certification statement at the end, enclose the questionnaire in the pre-addressed, postage-paid envelope, and drop it in the mail. If you did not receive—or have misplaced—the postage-paid envelope, call the RTI SURVEY HELPLINE (1-800-334-8571) and ask for Hall Ashmore.

What If I Manage Hazardous Waste Facilities at More Than One Location?

If you manage hazardous waste facilities at more than one location, you must complete a screening questionnaire for each of them. If you received questionnaires for more than one facility, please take the time to complete them all. If you have received the wrong number of questionnaires—either too many or too few—call the RTI SURVEY HELPLINE (1-800-334-8571) and ask for Hall Ashmore.

What If This Facility Does Not Manage Hazardous Waste?

Even if this facility no longer manages—or never managed—hazardous waste, please complete and return this questionnaire. The questionnaire instructions explain which questions to answer; the information you provide on your status as a facility that does not manage hazardous waste is important for our analyses.

This questionnaire applies only to the facility listed on this mailing label. Please check the SIC code, facility ID number, and the facility mailing address on this label and correct any mistakes.

(RTI will place facility mailing label here)

Definitions

NOTE: *The following definitions apply throughout this questionnaire. They are provided to help you answer the questions.*

Commercially Available Any hazardous waste management operation or process unit is considered "commercially available" if it is generally offered to third parties NOT UNDER THE SAME OWNERSHIP as this facility. Commercially available operations or process units are usually offered for a fee or other remuneration. However, commercially available operations or process units INCLUDE those used to manage waste purchased for recycling (reuse, reclamation, or recovery). Any operation or process unit offered ONLY to third parties UNDER THE SAME OWNERSHIP as this facility is NOT considered commercially available. Commercial hazardous waste management does not have to be the primary activity at a facility for an operation or process unit to be considered "commercially available."

Hazardous Waste Any waste, including wastewater, defined as hazardous by any federal or state regulation.

Hazardous Waste Management Facility Any facility that treats, stores, disposes, or recycles any hazardous waste.

Process Units Regulated Under RCRA Hazardous waste management process units that are regulated under RCRA.

Process Units Exempt From RCRA Hazardous waste management process units that are not regulated under RCRA, including elementary neutralization units, totally enclosed wastewater treatment systems, and aggressive biological treatment units.

Management Operations conducted in onsite process units to treat, store, dispose, or recycle hazardous waste. DOES NOT INCLUDE operations associated with shipping waste offsite for treatment, storage, disposal, or recycling at another facility.

Treatment Any activity designed to change the character or composition of any hazardous waste so as to render it nonhazardous or less hazardous; safer to transport, store, or dispose; or amenable for recovery or reduced in volume. When reporting quantities of hazardous waste treated, include all waste that was recycled in process units regulated under RCRA.

Storage The holding of hazardous waste. For this survey, there are two kinds of storage: (1) the holding of waste in tanks or drums under the 90-day rule and (2) other hazardous waste storage under RCRA.

Disposal Discharging or placing of hazardous waste into or onto any land or water with the intention of leaving it there after the facility closes. Specific disposal processes include landfills, disposal surface impoundments, land treatment, and injection wells.

Recycling Any process conducted to recover material or energy resources from hazardous waste. When reporting quantities of hazardous waste recycled, include only that waste that was processed in reuse, reclamation, and recovery process units that are exempt from RCRA.

If you need help, call the RTI Survey Helpline (1-800-334-8571)
Ask for Hall Ashmore

Questionnaire

IMPORTANT: *Read the definitions of key terms provided on the previous page.*

1. **Which of the following best describes the status of the hazardous waste management operations at this facility?**

   (CIRCLE ONLY ONE.)

   01 **This facility currently manages—treats, stores, disposes, or recycles—hazardous waste.** *(Go to Question 2)*

   02 **This facility is planned or under construction and has not yet opened.** *(Go to Question 2)*

   03 **At one time this facility managed hazardous waste but has stopped ALL hazardous waste management operations and has closed or has applied for closure of its hazardous waste management operations.** *(Go to Question 2)*

   04 **This facility has not managed hazardous waste since November 19, 1980, when hazardous waste became regulated under RCRA.** *(Skip to Question 7)*

Circle 01 even if operations at this facility have ***temporarily*** *ceased due to seasonal fluctuations or other reasons.*

Circle 02 if this facility is planned or under construction and has not yet opened.

Circle 03 only if all hazardous waste management operations at this facility have ceased AND this facility has either (a) closed, (b) applied for closure, or (c) begun closure of hazardous waste management operations.

NOTE Facilities with permits must notify the EPA Regional Administrator or an authorized state 180 days before beginning closure, and interim status facilities must submit a closure plan 180 days before beginning closure. Any permitted facility that has notified the EPA Regional Administrator that it plans to close **all** hazardous waste management units, or any interim status facility that has submitted a closure plan for **all** hazardous waste management units, should circle 02.

Circle 04 (a) if this facility has not managed hazardous waste since November 19, 1980, when hazardous waste became regulated under RCRA, or (b) if this facility generates, but does not manage (treat, store, dispose, or recycle), hazardous waste.

2. **How much waste defined as hazardous by Federal and State regulations was managed—treated, stored, or disposed—onsite at this facility during 1985 using process units regulated under RCRA? What percentage of that waste quantity was waste defined as hazardous under FEDERAL RCRA REGULATIONS?** *(Enter a waste quantity in either tons or gallons, circle the appropriate unit of measure, and enter a percentage.)*

Quantity of Federal and State hazardous waste managed onsite during 1985 using process units regulated under RCRA *(If none, enter zero.)*	**Units of measure**		**Percentage of waste defined as hazardous under Federal RCRA regulations** *(If none, enter zero.)*
	Tons	**Gallons**	
	01	02	%

Report here the total cumulative quantity of waste defined as hazardous under Federal and State regulations that entered one or more of this facility's treatment, storage, or disposal process units regulated under RCRA during 1985. COUNT ONLY ONCE any quantity of hazardous waste that entered more than one type of management operation. For example, hazardous waste that was both treated and stored SHOULD BE COUNTED ONLY ONCE. Similarly, hazardous waste that was treated more than once SHOULD BE COUNTED ONLY ONCE. Enter zero if no Federal or State hazardous waste was managed with process units regulated under RCRA onsite at this facility during 1985.

3. **How much waste defined as hazardous under Federal and State regulations was (a) treated (b) stored, and (c) disposed onsite at this facility during 1985 using process units regulated under RCRA?** *(As indicated in the answer space below, report (i) the quantity stored under the 90-day rule and (ii) the quantity of other storage regulated by RCRA.)* **In addition, what percentage of each of these 1985 waste quantities was waste defined as hazardous under FEDERAL RCRA REGULATIONS?** *(Enter the waste quantities in either tons or gallons, circle the appropriate unit of measure, and enter the percentages.)*

Types of waste management operation	**Quantity of Federal and State hazardous waste managed onsite during 1985 using process units regulated under RCRA** *(If none, enter zero.)*	**Units of measure**		**Percentage of waste defined as hazardous under Federal RCRA regulations** *(If none, enter zero.)*
		Tons	**Gallons**	
a. Treated onsite		01	02	%
b. Stored onsite				
i. 90-day rule		01	02	%
ii. Other		01	02	%
c. Disposed onsite		01	02	%

Report here the individual quantities of waste defined as hazardous under Federal and State regulations that entered this facility's treatment process units, storage process units, and disposal process units regulated under RCRA during 1985. Enter a zero quantity for any type of waste management operation not in use onsite.

COUNT ALL HAZARDOUS WASTE THAT ENTERED EACH TYPE OF WASTE MANAGEMENT OPERATION, whether or not it previously or subsequently entered another type of waste management operation. For example, hazardous waste that was both treated and disposed onsite at this facility during 1985 using process units regulated under RCRA SHOULD BE COUNTED TWICE—both in (a) "Treated onsite" and in (c) "Disposed onsite." However, hazardous waste that was subject to more than one process under a single type of management operation SHOULD BE COUNTED ONLY ONCE. For example, hazardous waste that was treated twice—distilled and then incinerated—SHOULD BE COUNTED ONLY ONCE in (a) "Treated onsite."

4. **How much waste defined as hazardous by Federal and State regulations was managed—treated or recycled—onsite at this facility during 1985 using process units exempt from RCRA? What percentage of that waste quantity was waste defined as hazardous under FEDERAL RCRA REGULATIONS?** *(Enter a waste quantity in either tons or gallons, circle the appropriate unit of measure, and enter a percentage.)*

Quantity of Federal and State hazardous waste managed onsite during 1985 using process units exempt from RCRA *(If none, enter zero.)*	**Unit of measure**		**Percentage of waste defined as hazardous under FEDERAL RCRA REGULATIONS** *(If none, enter zero.)*
	Tons	**Gallons**	
☐☐☐☐☐☐☐☐☐☐☐☐	01	02	☐☐☐ %

Report here the total cumulative quantity of waste defined as hazardous under Federal and State regulations that entered one or more of this facility's treatment or recycling process units exempt from RCRA during 1985. COUNT ONLY ONCE any quantity of hazardous waste that entered more than one type of management operation. For example, hazardous waste that was both treated and recycled SHOULD BE COUNTED ONLY ONCE. Similarly, hazardous waste that was treated more than once SHOULD BE COUNTED ONLY ONCE. Enter zero if no Federal or State hazardous waste was managed using process units exempt from RCRA onsite at this facility during 1985.

5. **How much waste defined as hazardous under Federal and State regulations was (a) treated and (b) recycled onsite at this facility during 1985 using process units exempt from RCRA? In addition, what percentage of these two 1985 waste quantities was waste defined as hazardous under FEDERAL RCRA REGULATIONS?** *(Enter the waste quantities in either tons or gallons, circle the appropriate units of measure, and enter the percentages.)*

Types of waste management operation	**Quantity of Federal and State hazardous waste managed onsite during 1985 using process units exempt from RCRA** *(If none, enter zero.)*	**Units of measure**		**Percentage of waste defined as hazardous under Federal RCRA regulations** *(If none, enter zero.)*
		Tons	**Gallons**	
a. Treated onsite	☐☐☐☐☐☐☐☐☐☐☐☐	01	02	☐☐☐ %
b. Recycled onsite	☐☐☐☐☐☐☐☐☐☐☐☐	01	02	☐☐☐ %

Report here the individual quantities of waste defined as hazardous under Federal and State regulations that entered this facility's treatment process units or recycling process units exempt from RCRA during 1985. Enter a zero quantity for any type of waste management operation not in use onsite.

COUNT ALL HAZARDOUS WASTE THAT ENTERED EACH TYPE OF WASTE MANAGEMENT OPERATION, whether or not it previously or subsequently entered another type of waste management operation. For example, hazardous waste that was both treated and recycled onsite at this facility during 1985 using process units exempt from RCRA SHOULD BE COUNTED TWICE—both in (a) "Treated onsite" and in (b) "Recycled onsite." However, hazardous waste that was subject to more than one process under a single type of management operation SHOULD BE COUNTED ONLY ONCE. For example, hazardous waste that was treated twice—distilled and then incinerated—SHOULD BE COUNTED ONLY ONCE in (a) "Treated onsite."

6. **Indicate the types of hazardous waste management process units that are onsite at this facility and the types of hazardous waste that can be managed with each.** *Specifically, opposite each type of hazardous waste management process unit listed down the left-hand side of the matrix (types a through o), circle numerical codes 01 through 08 across the matrix to indicate what types of hazardous waste that can be managed with each type of unit that is onsite—installed, permitted (where necessry), and operational. For units that are not installed, permitted (where necessary), and operational, circle 09. In addition, to indicate whether or not this facility's onsite hazardous waste management process units are "commercially available," circle 10 (Yes) OR 11 (No) for each type of process unit. Finally, to indicate which types of hazardous waste that this facility cannot manage with any type of unit onsite, circle the applicable codes 01 through 08 in the last row (p) of the matrix.*

NOTE: See the definition of "commercially available." Also, "operational" units include those that are temporarily down for maintenance or because of low demand.

Type of hazardous waste management process unit	**Which of the following types of RCRA-hazardous waste currently are managed onsite at this facility using each type of waste management operation?** *(Circle all that apply)*								**No process units of this type onsite**	**Are units of this type commercially available onsite?**	
	Acidic corrosives (pH < 2)	**Metals**	**Cyanides**	**Solvents**	**PCBs**	**Dioxins**	**Other halogenated organics**	**Other hazardous waste**		**Yes**	**No**
Treatment Operations											
a. Liquids incineration	01	02	03	04	05	06	07	08	09	10	11
b. Solids incineration	01	02	03	04	05	06	07	08	09	10	11
c. Wastewater treatment											
i. Biological treatment	01	02	03	04	05	06	07	08	09	10	11
ii. Steam stripping	01	02	03	04	05	06	07	08	09	10	11
iii. Other	01	02	03	04	05	06	07	08	09	10	11
d. Solidification	01	02	03	04	05	06	07	08	09	10	11
e. Treatment impoundment	01	02	03	04	05	06	07	08	09	10	11
f. Other treatment	01	02	03	04	05	06	07	08	09	10	11
Storage Operations											
g. Surface impoundment	01	02	03	04	05	06	07	08	09	10	11
h. Other storage	01	02	03	04	05	06	07	08	09	10	11
Disposal Operations											
i. Underground injection	01	02	03	04	05	06	07	08	09	10	11
j. Surface impoundment	01	02	03	04	05	06	07	08	09	10	11
k. Landfill	01	02	03	04	05	06	07	08	09	10	11
l. Other disposal	01	02	03	04	05	NA	NA	08	09	10	11
Recycling Operations											
m. Solvent recovery	01	02	03	04	05	NA	NA	08	09	10	11
n. Reuse as fuel	01	02	03	04	05	06	NA	08	09	10	11
o. Other recycling	01	02	03	04	05	06	NA	08	09	10	11
p. **There are no units onsite at this facility that can be used to manage this type of waste**	01	02	03	04	05	06	07	08	NA	NA	NA

NA = Not applicable.

7. Provide the following information for potential future survey-related contacts with this facility.

a. What is your name, title, and telephone number?

Name ______________________________ Title ______________

Telephone (_______) ______________
Area code

b. Is your address the same as that listed on the mailing label provided above? *(Circle 01 or 02)*

01 Yes *Skip to Certification Statement at end of questionnaire)*
02 No *(Go to Question 7c)*

c. At what address can you be contacted for future survey-related information?

Mailing address ______________________________

City ______________________________ State ______________ ZIP ______________

Certification Statement

I hereby certify under penalty of law that the information submitted above is true, accurate, and complete to the best of my knowledge.

______________________ ______________________ ______________
Name *(print or type)* Signature Date

When you have completed all questions and signed and dated the certification statement, tear along the perforated line, enclose the questionnaire in the pre-addressed, postage-paid envelope, and drop it in the mail.

Appendix B

Final Screener Questionnaire

EPA

OMB # 2050-0055
Expires January 31, 1988

1986 National Screening Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities

Introduction

The Office of Solid Waste (OSW) of the U.S. Environmental Protection Agency (EPA) is conducting a survey of U.S. hazardous waste treatment, storage, disposal, and recycling facilities. EPA has retained the Research Triangle Institute (RTI) as its survey contractor. Section 3007 of the Resource Conservation and Recovery Act (RCRA) requires your participation in this survey. Please complete and return this questionnaire booklet within 30 days of receiving it.

This survey is being conducted to gather information on the nation's capacity to treat, store, dispose, and recycle hazardous waste. This information will be used to assess the availability of alternatives to land disposal for the waste types scheduled for upcoming land disposal restrictions under the Hazardous and Solid Waste Amendments of 1984 (HSWA). The survey results will also support analyses of future regulatory actions.

EPA is conducting this survey in two parts—a screening survey of all hazardous waste treatment, storage, disposal, and recycling facilities (both onsite and commercial) and a detailed survey of a sample of these facilities. This is the first part, the screening survey questionnaire.

We have identified the facility listed on the label below as a hazardous waste treatment, storage, disposal, or recycling facility for purposes of this survey. We would therefore like this facility to provide the information requested in the brief questionnaire on the following pages.

What Is This Screening Survey Questionnaire?

This screening survey questionnaire asks for information that will be used to identify and characterize hazardous waste facilities and to determine the size and composition of the sample for the detailed survey. Your timely and accurate responses to this questionnaire will help us reduce the number of facilities required to respond to the detailed questionnaire.

Who Should Complete the Questionnaire?

This questionnaire should be completed by the person who is most knowledgeable of the hazardous waste treatment, storage, disposal, and recycling operations at this facility. All facilities receiving this questionnaire should complete and return it. Even if operations have temporarily or permanently ceased or if no hazardous waste is treated, stored, disposed, or recycled at this facility, we need your response indicating that this is the case in order to update our records and to get a clearer picture of hazardous waste facilities in the United States.

How Do I Complete the Questionnaire?

This screening questionnaire booklet contains seven questions. The instructions contain all the information, including definitions of key terms, that you may need to answer the questions. When you have completed the questionnaire and signed and dated the Certification Statement at the end, enclose the questionnaire booklet in the pre-addressed, postage-paid envelope, and drop it in the mail. If you did not receive—or have misplaced—the postage-paid envelope, call the RTI SURVEY HELPLINE (1-800-334-8571) between 9 a.m. and 4 p.m. eastern standard time (EST) and ask for Hall Ashmore.

What If I Manage Hazardous Waste Facilities at More Than One Location?

If you manage hazardous waste treatment, storage, disposal, or recycling facilities at more than one location, you must complete a screening questionnaire for each of them. Please make sure you have received a questionnaire for each facility you manage. If you have received the wrong number of questionnaires—either too many or too few—call the RTI SURVEY HELPLINE (1-800-334-8571) between 9 a.m. and 4 p.m. EST and ask for Hall Ashmore.

What If This Facility Does Not Treat, Store, Dispose, or Recycle Hazardous Waste?

Even if this facility no longer treats, stores, disposes, or recycles hazardous waste, or never has, please complete and return this questionnaire. The questionnaire instructions explain which questions to answer; the information you provide on your status as a facility that does not treat, store, dispose, or recycle hazardous waste is important for our analyses.

This questionnaire applies only to the facility listed on this label. Refer to this label for questions on potential future survey-related contacts.

(RTI will place facility label here)

Definitions

The following definitions have been developed for this survey and apply throughout this questionnaire.

IMPORTANT NOTE: *Treatment, storage, and disposal in surface impoundments and storage in waste piles are among the operations that will be prohibited by the land disposal restrictions under HSWA. For this survey, however, report quantities of hazardous waste treated, stored, or disposed in surface impoundments or stored in waste piles under the appropriate treatment, storage, or disposal categories. Do not report them all under disposal.*

Commercially Available Any hazardous waste treatment, storage, disposal, or recycling operation or unit is considered "commercially available" if it is generally offered to other parties NOT UNDER THE SAME OWNERSHIP as this facility. Commercially available operations or units are usually offered for a fee or other remuneration. However, commercially available operations or units INCLUDE those used to recycle (reuse, reclaim, or recover) hazardous waste that has been purchased. Any operation or unit offered ONLY to other parties UNDER THE SAME OWNERSHIP as this facility is NOT considered commercially available. Commercial hazardous waste treatment, storage, disposal, or recycling does not have to be the primary activity at a facility for an operation or unit to be considered "commercially available."

Disposal Injecting, dumping, or placing of hazardous waste into or onto any land. For this survey, report only on the following disposal operations: landfills, disposal surface impoundments, land treatment, and injection wells.

Hazardous Waste Any waste, including wastewater, defined as hazardous by any federal or state regulation.

Hazardous Waste Operations Activities conducted in onsite hazardous waste units to treat, store, dispose, or recycle hazardous waste. DOES NOT INCLUDE shipping waste offsite for treatment, storage, disposal, or recycling at another facility.

RCRA The Resource Conservation and Recovery Act of 1976—the federal statute that regulates the treatment, storage, and disposal of hazardous waste. Some states have RCRA statutes as well.

Recycling Any reuse, reclamation, or recovery activity conducted in a unit exempt from RCRA permitting requirements to recover material or energy resources from hazardous waste. NOTE: For this survey, some activities that you may commonly call "recycling" should be reported as "treatment" if they are conducted in units regulated under RCRA. See the IMPORTANT NOTE on the top of page 5 for a list of the recycling operations that we would like you to report as exempt from RCRA permitting requirements.

Storage The holding of hazardous waste for a temporary period, at the end of which it is treated, disposed, recycled, or stored elsewhere. For this survey, we want you to report two kinds of activities as storage of hazardous waste: (1) the accumulation of hazardous waste in tanks or containers under the federal RCRA 90-day rule and (2) other hazardous waste storage under RCRA. In addition, waste piles are considered storage units.

Treatment Any activity designed to change the character or composition of any hazardous waste so as to render it nonhazardous or less hazardous; safer to transport, store, or dispose; amenable for recovery; or reduced in volume. Include quantities of hazardous waste incinerated as treatment in units regulated under RCRA. For this survey, we ask you to report two types of treatment: (1) that conducted in units regulated under RCRA and (2) that conducted in units exempt from RCRA permitting requirements. See the IMPORTANT NOTE at the top of page 5 for a list of treatment units that we would like you to report as exempt from RCRA permitting requirements.

Units Exempt From RCRA Permitting Requirements Hazardous waste treatment or recycling operations that do not require permits under RCRA. See the IMPORTANT NOTE at the top of page 5 for a list of operations that we would like you to report as exempt from RCRA permitting requirements. NOTE: Any storage conducted prior to an exempt process is regulated and should be reported as such.

EPA **If you need help, call the RTI Survey Helpline (1-800-334-8571) between 9 a.m. and 4 p.m. eastern standard time (EST). Ask for Hall Ashmore.**

Questionnaire

IMPORTANT: *Read the definitions of key terms provided on the previous page. Also, read all the instructions (in italics) for each question before answering the question.*

1. **Which of the following best describes the status of the hazardous waste operations at this facility?**

CIRCLE THE ONE CODE that best describes the current status of hazardous waste operations at this facility. Circle 01 even if operations at this facility have ***temporarily*** *ceased due to seasonal fluctuations or other reasons. Circle 05 (a) if this facility has not treated, stored disposed, or recycled hazardous waste since November 19, 1980, when hazardous waste became regulated under RCRA, or (b) if this facility generates, but does not treat, store (except under the federal RCRA 90-day rule), dispose, or recycle hazardous waste.*

01 **This facility currently treats, stores, disposes, or recycles hazardous waste.** *(Read the* **IMPORTANT NOTE** *below and then go to Question 2.)*

02 **This facility is planned or under construction and has not yet opened.** *(Read the* **IMPORTANT NOTE** *below and then go to Question 2.)*

03 **At one time this facility treated, stored, disposed, or recycled hazardous waste, but it has ceased ALL such hazardous waste operations and has closed ALL its hazardous waste treatment, storage, disposal, and recycling units.** *(Skip to Question 7.)*

04 **This facility is either (a) a permitted facility that has notified the EPA Regional Administrator that it plans to close ALL its hazardous waste treatment, storage, disposal, or recycling units or (b) an interim status facility that has submitted a closure plan for ALL its hazardous waste treatment, storage, disposal, or recycling units.** *(Read the* **IMPORTANT NOTE** *below and then go to Question 2.)*

05 **This facility has not treated, stored, disposed, or recycled hazardous waste since November 19, 1980, when hazardous waste became regulated under RCRA.** *(Skip to Question 7.)*

IMPORTANT NOTE: *Read this before answering Questions 2, 3, 4, 5, and 6.*

The quantities you report in Questions 2, 3, 4, and 5 and your responses to the matrix in Question 6 should reflect the following items:

- Incineration should be reported as a treatment operation.
- Waste piles should be reported as a storage operation.
- Recycling (reuse, reclamation, or recovery) in REGULATED units should be reported as treatment.
- Recycling (reuse, reclamation, or recovery) in EXEMPT units should be reported as recycling.
- Waste defined as hazardous by the state in which it is generated should be considered hazardous even if it is not defined as hazardous by the state in which it is treated, stored, disposed, or recycled.
- Do not report anywhere in this questionnaire any quantity of nonhazardous waste, even if treated, stored, disposed, or recycled as if it were hazardous.
- Do not report anywhere in this questionnaire any quantity of waste treated in a totally enclosed treatment unit—a treatment unit directly connected to an industrial production process and from which no hazardous waste is released into the environment during treatment.
- Although polychlorinated biphenyls (PCBs) are regulated under the Toxic Substances Control Act, report PCB waste as federal RCRA hazardous waste for this survey.

2. **How much waste defined as hazardous by federal or state regulations was TREATED, STORED, OR DISPOSED onsite at this facility during 1985 in units REGULATED UNDER RCRA? What percentage of that waste quantity was waste defined as hazardous by federal RCRA regulations?** *(Enter a waste quantity in either tons or gallons, circle the appropriate unit of measure, and enter a percentage.)*

Report here the TOTAL quantity of waste defined as hazardous by federal or state regulations that entered one or more of this facility's treatment, storage, or disposal units REGULATED UNDER RCRA during 1985. REPORT ONLY ONCE any quantity of hazardous waste that entered more than one type of operation. For example, hazardous waste that was both treated and stored should be reported only ONCE. Similarly, hazardous waste that was treated more than once should be reported only ONCE. Enter zero if no federal or state hazardous waste was treated, stored, or disposed in units REGULATED UNDER RCRA onsite at this facility during 1985.

TOTAL quantity of federal or state hazardous waste TREATED, STORED, OR DISPOSED onsite during 1985 in units REGULATED UNDER RCRA *(If none, enter zero.)*	**Units of measure** *(Circle one.)* Tons	 Gallons	**Percentage of waste defined as hazardous by federal RCRA regulations** *(If none, enter zero.)*
☐☐☐☐☐☐☐☐☐☐☐☐	01	02	☐☐☐ %

3. **How much waste defined as hazardous by federal or state regulations was (a) TREATED, (b) STORED, or (c) DISPOSED onsite at this facility during 1985 in units REGULATED UNDER RCRA?** *(As indicated in the answer space below, report (i) the quantity accumulated in tanks or containers under the federal RCRA 90-day rule and (ii) the quantity stored in other units REGULATED UNDER RCRA.)* **In addition, what percentage of each of these 1985 waste quantities was waste defined as hazardous by federal RCRA regulations?** *(Enter the waste quantities in either tons or gallons, circle the appropriate unit of measure, and enter the percentages.)*

Report here the quantities of waste defined as hazardous by federal or state regulations that entered this facility's treatment units, storage units, or disposal units REGULATED UNDER RCRA during 1985. Enter a zero quantity for any type of hazardous waste operation not onsite.

REPORT ALL HAZARDOUS WASTE THAT ENTERED TREATMENT, STORAGE, OR DISPOSAL OPERATIONS, whether or not it previously or subsequently entered another of those operations. For example, hazardous waste that was both treated and disposed onsite at this facility during 1985 in units REGULATED UNDER RCRA should be reported TWICE—both in (a) "Treated onsite" and in (c) "Disposed onsite." However, hazardous waste that entered more than one type of unit under a single type of hazardous waste operation should be reported only ONCE. For example, hazardous waste that was treated twice—e.g., incineration followed by solidification of residuals—should be reported only ONCE, in (a) "Treated onsite."

Type of hazardous waste operation	**Quantity of federal or state hazardous waste TREATED, STORED, OR DISPOSED onsite during 1985 in units REGULATED UNDER RCRA** *(If none, enter zero.)*	**Units of measure** *(Circle one.)* Tons	 Gallons	**Percentage of waste defined as hazardous by federal RCRA regulations** *(If none, enter zero.)*
a TREATED onsite	☐☐☐☐☐☐☐☐☐☐☐☐	01	02	☐☐☐ %
b STORED onsite				
i Federal RCRA 90-day rule	☐☐☐☐☐☐☐☐☐☐☐☐	01	02	☐☐☐ %
ii Other RCRA-regulated storage	☐☐☐☐☐☐☐☐☐☐☐☐	01	02	☐☐☐ %
c DISPOSED onsite	☐☐☐☐☐☐☐☐☐☐☐☐	01	02	☐☐☐ %

IMPORTANT NOTE: *Read this before answering Questions 4 and 5.*

Report quantities of hazardous waste treated or recycled in the following units as exempt from RCRA permitting requirements:

- TREATMENT
  - — Elementary neutralization
  - — Wastewater treatment in tanks that are regulated under the Clean Water Act.
- RECYCLING
  - — Solvent recovery (distillation, fractionation, steam stripping)
  - — Reuse of hazardous waste as fuel in boilers and industrial furnaces (NOTE: incineration is treatment in a RCRA-regulated unit.)
  - — Any recycling operation that does NOT involve putting hazardous waste onto land.

DO NOT report the following quantities of hazardous waste as exempt from RCRA permitting requirements:

- — Any hazardous waste quantities that are exempt for other reasons. DO NOT REPORT these waste quantities anywhere on this questionnaire.
- — Any hazardous waste quantity treated or recycled in units exempt from RCRA if it was previously TREATED in a unit that is regulated under RCRA.
- — Any hazardous waste treated or recycled in a totally enclosed treatment facility—a unit directly connected to an industrial production process and from which there is no release of hazardous waste into the environment during treatment.
- — Any quantity of nonhazardous waste. DO NOT REPORT nonhazardous waste anywhere on this questionnaire.

NOTE: Storage before recycling is a regulated activity and should be reported as such.

4. **How much waste defined as hazardous by federal or state regulations was TREATED OR RECYCLED onsite at this facility during 1985 in units EXEMPT FROM RCRA? What percentage of that waste quantity was waste defined as hazardous by federal RCRA regulations?** *(Enter a waste quantity in either tons or gallons, circle the appropriate unit of measure, and enter a percentage.)*

Report here the TOTAL quantity of waste defined as hazardous by federal or state regulations that entered one or more of this facility's treatment or recycling units EXEMPT FROM RCRA during 1985. REPORT ONLY ONCE any quantity of hazardous waste that entered more than one type of operation. For example, hazardous waste that was both treated and recycled should be reported only ONCE. Similarly, hazardous waste that was treated more than once should be reported only ONCE. Enter zero if no federal or state hazardous waste was TREATED OR RECYCLED in units EXEMPT FROM RCRA onsite at this facility during 1985.

TOTAL quantity of federal or state hazardous waste TREATED OR RECYCLED onsite during 1985 in units EXEMPT FROM RCRA *(If none, enter zero.)*	**Units of measure** *(Circle one.)* Tons	Gallons	**Percentage of waste defined as hazardous by federal RCRA regulations** *(If none, enter zero.)*
	01	02	%

5. **How much waste defined as hazardous under federal or state regulations was (a) TREATED or (b) RECYCLED onsite at this facility during 1985 in units EXEMPT FROM RCRA? In addition, what percentage of each of these 1985 waste quantities was waste defined as hazardous by federal RCRA regulations?** *(Enter the waste quantities in either tons or gallons, circle the appropriate unit of measure, and enter the percentages.)*

Report here the individual quantities of waste defined as hazardous by federal or state regulations that entered this facility's treatment units or recycling units EXEMPT FROM RCRA during 1985. Enter a zero quantity for any type of hazardous waste operation not onsite.

REPORT ALL HAZARDOUS WASTE THAT ENTERED TREATMENT OR RECYCLING OPERATIONS, whether or not it previously or subsequently entered the other type of operation. For example, hazardous waste that was both treated and recycled onsite at this facility during 1985 in units EXEMPT FROM RCRA should be reported TWICE—both in (a) "Treated onsite" and in (b) "Recycled onsite." However, hazardous waste that entered more than one unit under a single type of hazardous waste operation should be reported only ONCE. For example, hazardous waste that underwent both cyanide destruction and lime precipitation should be reported only ONCE, in (a) "Treated onsite."

Type of hazardous waste operation	**Quantity of federal or state hazardous waste TREATED OR RECYLED onsite during 1985 in units EXEMPT FROM RCRA** *(If none, enter zero.)*	**Units of measure** *(Circle one.)* Tons	Gallons	**Percentage of waste defined as hazardous by federal RCRA regulations** *(If none, enter zero.)*
a. TREATED onsite		01	02	%
b. RECYCLED onsite		01	02	%

6. **Indicate the types of hazardous waste treatment, storage, disposal, and recycling units that are onsite at this facility and the types of hazardous waste that can be treated, stored, disposed, or recycled with each.**

- *Circle codes 01 through 08 in the first row (a) of the matrix to indicate the types of hazardous waste that cannot be treated, stored, disposed, or recycled in any type of unit onsite at this facility.*
- *Opposite each type of hazardous waste unit listed down the left-hand side of the matrix (rows b through q), circle codes 01 through 08 to indicate the types of hazardous waste that can be treated, stored, disposed, or recycled in each type of unit that is onsite that has a permit or interim status (where necessary), and that is operational at this facility.*
- *For each type of unit, circle 09 if there is no unit onsite at this facility, if it is not permitted or interim status (where necessary), or if it is not operational.*
- *Circle either 10 (YES) or 11 (NO) for each type of onsite unit to indicate whether or not this facility's units are "commercially available."*

NOTE *See the definition of "commercially available" on page 2. In addition, "operational" units should include those that are temporarily not operational due to repairs, maintenance, or low demand.*

Type of hazardous waste unit	**Which of the following types of RCRA-hazardous waste currently are treated, stored, disposed, or recycled onsite at this facility using each type of hazardous waste unit?[*]** *(Circle all that apply.)*								**No units of this type onsite**	**Are onsite units of this type commercially available?**	
	Acidic corrosives (pH < 2)	**Metals**	**Cyanides**	**Solvents**	**PCBs**	**Dioxins**	**Other halogenated organics**	**Other hazardous waste**		**Yes**	**No**
a. No waste of this type can be treated, stored, disposed, or recycled at this facility	01	02	03	04	05	06	07	08			
Treatment Operations											
b. Liquids incineration	01	02	03	04	05	06	07	08	09	10	11
c. Solids incineration	01	02	03	04	05	06	07	08	09	10	11
d. Wastewater treatment[†]											
i. Biological treatment	01	02	03	04	05	06	07	08	09	10	11
ii. Steam stripping[§]	01	02	03	04	05	06	07	08	09	10	11
iii. Other	01	02	03	04	05	06	07	08	09	10	11
e. Solidification[**]	01	02	03	04	05	06	07	08	09	10	11
f. Treatment impoundment	01	02	03	04	05	06	07	08	09	10	11
g. Other treatment[‡]	01	02	03	04	05	06	07	08	09	10	11
Storage Operations											
h. Storage impoundment	01	02	03	04	05	06	07	08	09	10	11
i. Waste pile	01	02	03	04	05	06	07	08	09	10	11
j. Other storage	01	02	03	04	05	06	07	08	09	10	11
Disposal Operations											
k. Underground injection	01	02	03	04	05	06	07	08	09	10	11
l. Disposal impoundment	01	02	03	04	05	06	07	08	09	10	11
m. Landfill	01	02	03	04	05	06	07	08	09	10	11
n. Land treatment	01	02	03	04	05	06	07	08	09	10	11
Recycling Operations											
o. Solvent recovery[§§]	01	02	03	04	05	06	07	08	09	10	11
p. Reuse as fuel	01	02	03	04	05	06	07	08	09	10	11
q. Other recycling	01	02	03	04	05	06	07	08	09	10	11

[*] These compounds exist in most wastes at very low concentrations. Provide information on them based on what each treatment, storage, disposal and recycling unit onsite at this facility is "typically" designed to take.

[†] If this facility's wastewater treatment system includes a treatment impoundment, also circle all the applicable codes opposite "treatment impoundment."

[§] For this survey, "steam stripping" as a treatment operation is the removal of organic contaminants from a waste using direct or indirect contact steam for the primary purpose of complying with publicly owned treatment works (POTW) or National Pollutant Discharge Elimination System (NPDES) wastewater discharge limitations.

[**] For this survey, "solidification" includes units sometimes referred to as "fixation" or "stabilization" units.

[‡] If the "other treatment" occurs in a treatment impoundment, also circle all the applicable codes opposite "treatment impoundment."

[§§] For this survey, "solvent recovery" is the removal of organic constituents from waste for the primary purpose of recovering the organic compound for reuse. As defined here, "solvent recovery" includes units that are sometimes referred to as "batch distillation" or "fractionation" units. Steam stripping is sometimes used for solvent recovery and should be noted separately from steam stripping as a treatment operation.

7. **Provide the following information for potential future survey-related contacts with this facility.**

a. **Is the EPA identification number of this facility the same as that given in the label on the cover of this questionnaire?**

01 YES *(Skip to Question 7c.)*
02 NO *(Go to Question 7b.)*

b. **Enter the correct EPA identification number of this facility in the space provided below.**

☐☐☐☐☐☐☐☐☐☐☐☐ *(Go to Question 7c.)*

c. **Are the company name and STREET ADDRESS (physical location) of this facility the same as those given in the label on the cover of this questionnaire?**

01 YES *(Skip to Question 7e.)*
02 NO *(Go to Question 7d.)*

d. **Enter the correct company name and STREET ADDRESS (physical location) of this facility in the space provided below.**

Company name ____________________
Street address ____________________
City ____________________ State __________ ZIP __________
(Go to Question 7e.)

e. **What is your name, title, and telephone number?**

Name ____________________ Title ____________________
Telephone (______) ____________ *(Go to Question 7f.)*
Area code

f. **Is your MAILING ADDRESS the same as the facility street address (physical location) given in the label on the cover of this questionnaire?** NOTE: "Mailing address" refers to the address at which you can be reached for potential future survey-related contacts.

01 YES *(Skip to Certification Statement below.)*
02 NO *(Go to Question 7g.)*

g. **At what MAILING ADDRESS can you be contacted for future survey-related information?**

Mailing address ____________________
City ____________________ State __________ ZIP __________
(Go to Certification Statement below.)

Certification Statement

I hereby certify under penalty of law that the information submitted above is true, accurate, and complete to the best of my knowledge.

____________________ ____________________ __________
Name *(print or type)* Signature Date

When you have completed all questions and signed and dated the Certification Statement, enclose this questionnaire booklet in the pre-addressed, postage-paid envelope and drop it in the mail.